THE NAVY'S ENERGY & ENVIRONMENTAL MAGAZINE

Winter 2012

NAWY REGION NORTHWEST

TRANS.

SAILORS HELP LOCAL NATIVE AMERICAN TRIBES WITH CLAM SEEDING

Spotlight on the Office of Naval Research
Highlights of a Charged Energy Awareness Month
MCLB Albany Officials Flip Switch for Landfill Gas-to-Energy Plant



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Sailors from Navy Region Northwest continued to foster relations with local Native American tribes by helping to seed three million manila clams along the beaches of Naval Magazine Indian Island.

Photo by MC2 Scott McCall

Navy Region Northwest Fosters Tribal Relations

Sailors Help Local Native American Tribes with Clam Seeding

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This magazine is an authorized publication for members of the Department of Defense. Statements made in the N45 Outlook column reflect the official environmental policy of the Navy. The contents in the remainder of the magazine are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the United States Navy. Inclusion of any product or service in any *Currents* feature article does not constitute an endorsement by the Navy. The Navy encourages all readers to check with the appropriate supervising authority prior to using any product or service mentioned in the magazine.

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Concerted Efforts Improve Our **Energy Security**

WELCOME TO THE winter 2012 issue of Currents. As I reflect on the past few busy months here in the Pentagon, I realize that it has been just over twenty years since October was first designated as National Energy Awareness Month. Since then, we as a Navy and a nation have made a concerted effort to improve energy security. Along the way, especially in recent years, the Navy and U.S. Marine Corps have enjoyed some headline-making progress.

October Energy Awareness Month

As you can read in this issue, numerous commands celebrated Energy Awareness Month in diverse ways. Activities ranged from a solar-powered band concert to a solarpowered cooking exhibit to an essay contest and a solarpowered dune buggy demonstration. It is inspiring to know that so many people are working hard to get the word out about ways we can all contribute to our nation's energy security.

2011 Naval Energy Forum

Perhaps the main Energy Awareness Month headline for the Department of Navy (DoN) was the 2011 Naval Energy Forum held 13-14 October in Washington, DC. It was an opportunity for key speakers from DoN, other governmental agencies, industry, and academia to meet face-toface and share ideas in the crucial pursuit of energy security and independence. It was an insightful two days,

invest up to \$510 million during the next three years in partnership with the private sector to produce advanced biofuels. In response, the Honorable Ray Mabus, along with the Secretaries of the Department of Agriculture and Department of



Energy, released a request for information to industry that requests specific ideas for how to leverage private capital markets to establish a commercially viable advanced biofuels industry.

As mentioned by SECNAV, the combined effort of these three Departments will:

- Effectively decrease U.S. dependence on foreign oil
- Create opportunities for U.S. landowners and operators to produce biomass for commercial energy production in ways that are both economically and environmentally sound
- Position U.S. companies to become global leaders in the production of drop-in biofuels

It is inspiring to know that so many people are working hard to get the word out about ways we can all contribute to our nation's energy security.

and I thank each of the speakers, especially Secretary of the Navy (SECNAV) Ray Mabus and Chief of Naval Operations Admiral Jonathan Greenert, who gave their time generously to further inspire the culture change necessary to ensure our energy security. You will learn more about the Forum and many of the Navy's energy programs in the spring 2012 issue of Currents.

Departments of the Navy, Energy, and Agriculture Team-Up

On 16 August 2011, President Obama announced that the U.S. Departments of Agriculture, Energy, and Navy will

In the meantime, the Navy has developed critical protocols needed to certify biofuels for use in Naval tactical systems. Per DoN requirements, biofuels must serve as 'drop-in' replacements for petroleum-based fuel, meaning they require no modification of current aircraft and ship engines, and are:

- Indistinguishable in performance for our warfighters
- Domestically produced and geographically distributed
- Priced competitively with petroleum

- Of a lower carbon footprint than traditional fossil fuels
- Without adverse impact to food production

Biofuels Pass Muster with DoN

The Navy's first aviation biofuel test program was centered on the F/A-18, which tested and evaluated the performance of a 50/50 biofuel blend in supersonic flight operations during the spring of 2010. Since then, examples of other certification tests include the Riverine Command Boat, MH-60 Seahawk, V-22 Osprey, T-45 Goshawk, EA-6B Prowler, AV-8B Harriet, MQ-8B Fire Scout, and the Self-Defense Test Ship.

Perhaps the most public demonstration of biofuel capability was done by the Blue Angels, which performed during Labor Day weekend at Naval Air Station Patuxent River using a 50/50 blend of conventional JP-5 jet fuel and camelina-based biofuel. Their ability to inspire awe was

What does it mean to be an 'Energy Warrior'? It means adopting an energy frugal mindset into every aspect of mission planning, training, and execution and leveraging significant investments in energy efficiency and alternative energy to increase chances of mission success. Going forward, I'd like to see all Navy academic institutions follow NPS's example and pick up the energy torch to develop our young Sailors and Marines into 'Energy Warriors,' as well. To do that, the lessons learned in the classroom must be turned into action at the fleet level. As such, each officer will be measured by:

- Promotion board guidelines and fitness report standards that are adjusted to value true 'Energy Warriors'
- Actions that help his or her command be competitive for the coveted Battle E

The Navy has developed critical protocols needed to certify biofuels for use in Naval tactical systems.

enhanced by the fact that they are the only flight-demonstration team that builds its entire routine using actual aerial combat maneuvers. As such, they provided the ultimate demonstration and confidence test as they executed their diamond formation, which requires a 14-foot overlap between wings of adjacent aircraft, leaving only 18 inches from wing tip to canopy between aircraft.

From Classroom to Deckplate, DoN Sends Clear Message: Warfighting First!

SECNAV understands the key to effectively getting our nation's energy message to the deckplate involves well-informed leadership. As a result, on 29 August 2011, he announced that beginning this fall, the Naval Postgraduate School (NPS) in Monterey, CA will begin an energy graduate degree program, the first military educational institution to do so. Furthermore, NPS will launch an Executive Energy Series to bring our senior leadership together to discuss energy challenges and solutions for the Navy and Marine Corps. By including energy as a key part of NPS's curriculum, we will be actively molding future 'Energy Warriors'.

Looking Forward

Clearly, recent headlines demonstrate DoN's impressive level of commitment to addressing current energy realities that are far different from those we faced two decades ago when Energy Awareness Month first began. Moreover, DoN will be making even more headlines as we ramp up for the 2012 Green Strike Group demonstration that will include ships and aircraft operating on alternative fuels and utilizing energy efficiency technologies. The Green Strike Group demonstration is in response to one of SECNAV's five energy goals. If you would like to learn more about those goals or follow the Green Strike Group's exciting and challenging journey, visit http://greenfleet.dodlive.mil.

Regarding energy awareness and energy efficiencies, we are doing far better than we were two decades ago, and each new positive endeavor strengthens our energy security. We are steadily making headway; we will get there, but until we do, we remain precariously vulnerable to "... fate, chance, kings, and desperate men." (John Donne)

Rear Admiral Philip H. Cullom Director, Energy and Environmental Readiness

OSTENS_ reations

SAILORS HELP LOCAL NATIVE AMERICAN TRIBES WITH CLAM SEEDING

> ailors from Navy Region Northwest continued to foster relations with local Native American tribes by helping to seed three million manila clams along the beaches of Naval Magazine (NAVMAG) Indian Island on 9-11 August 2011.

The seeding project is part of a larger agreement between the Navy and the local Native American tribes in the Pacific Northwest to recognize the tribes' treaty harvest rights and facilitate the Navy's mission requirements while sharing the land and waters of Puget Sound.





"This particular shellfish seeding project is the result of a mitigation agreement related to the installation of a port security barrier that provides force protection for visiting ships and submarines," said Bill Kalina, NAVMAG Indian Island environmental site manager. The seeding process enhances existing clam stocks on the beaches, allowing the tribes to harvest greater quantities of clams during their harvest seasons.

predators. Then beginning on 9 August, they began to seed the netted areas with baby manila clams.

"There are ducks and crab that like to come in and eat the baby clams, so

"Six beaches on Indian Island have been designated as tribal harvest beaches, allowing the tribes to seed and harvest those particular beaches every year of the agreement. The tribes will seed between one and two acres of tribal beach area with baby clams each year, checking on them periodically until they're ready to be harvested, which usually takes about three years," said Kalina.

This year, the project started 1 August 2011. For three days, tribal members and Navy personnel worked together to stake out protective netting along the beach to minimize harm from

Navy region northwest's Council

o facilitate government-to-government consultations and relations, Commander, Navy Region Northwest chairs the Northwest Navy Tribal Council. This forum, established in 2003, serves to build strong relationships among tribal leaders and Navy executives at the region and installation level. These relationships help to develop mutual trust and improve knowledge, sensitivity and communications among the Navy and the federally-recognized tribes of Western Washington State. Open dialogue with tribes on issues such as effective consultation processes, training and operations, marine mammal issues, natural and cultural resources, shellfish and water quality allows the Navy and the tribes to care for the land and water they share in the Pacific Northwest.



these nets provide a higher rate of survival," said Kalina.

The partnership between the Navy and the tribes ensures that the tribes have access to NAVMAG Indian Island's beaches to harvest shellfish, such as the clams seeded in this effort, for the purpose of subsistence and preserving tribal traditions.

"The tribal members harvest commercially for their existence and for ceremonies, so the additional resources provide them with extra income," said Viviane Barry, shellfish program manager for the Suquamish Tribe's Fisheries Department.

"It's a tradition that's been going on for thousands of years," said Barry. "Tribes have been living off the tide lands in Washington State and it's a tradition that they want to continue."

"NAVMAG Indian Island has had a long-standing relationship with the local tribes. The installation has worked closely with the tribes for more than two decades to develop natural resource agreements and access procedures to achieve both the Navy's mission as well as preserve the tribes' cultural traditions and harvesting rights," Kalina said.

Chief Warrant Officer 3 Walter Bayne seeds baby manila clams along a beach at NAVMAG Indian Island. MC2 Scott McCall



THE SEEDING PROCESS ENHANCES
EXISTING CLAM STOCKS ON THE
BEACHES, ALLOWING THE TRIBES TO
HARVEST GREATER QUANTITIES OF
CLAMS DURING THEIR HARVEST SEASONS.



"They're water people and we're a water-oriented mission agency—so we have that in common," said Kalina. "We can keep the Navy running and supply the fleet with ordnance and weapons storage here, but we can also maintain the ecosystem and provide the tribes access to beaches to exercise their harvest treaty rights."

The Navy and tribes share unique federal "usual and accustomed" fishing rights in the Puget Sound area. Mitigation projects—like the clam-seeding at

NAVMAG Indian Island—help support these mutual interests within the Navy's third-largest fleet concentration area.

"We want to be good neighbors. We work well with the tribes and we always have," said Cmdr. Gary Martin, NAVMAG Indian Island commanding officer.

winter 2012

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Master-at-Arms 1st Class Samuel Moon spreads manila clams on the shore of NAVMAG Indian Island. Sailors from Navy Region Northwest helped local Native American tribes seed three million manila clams.

MC2 Scott McCall

"The Navy does a great job with all the tribes in Puget Sound. We just want to continue to have that good relationship."

Seeding and harvesting manila clams on Indian Island may also provide additional environmental benefits to the surrounding community. Shellfish like the manila clams are filter feeders, straining out particles and eating microscopic plants (such as phytoplankton) that float in the water. Some species are capable of filtering up to 65 gallons of sea water per day. By reducing the phytoplankton population, a robust shellfish population can help to reduce the occurrence of

FEDERALLY-RECOGNIZED

Tribes & Treaty Rights

n 1855, Territorial Governor Isaac Stevens negotiated treaties with 24 of the 29 modern-day federally-recognized tribes in Washington State. The treaties included language pronouncing that "[T]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory...together with the privilege of hunting and gathering roots and berries on open and unclaimed lands." Subsequent legal decisions have identified "usual and accustomed" (U&A) areas and afforded tribes the right to fifty percent of all fish and shellfish present or passing through the tribes' historical U&A areas, including on and off-reservation areas where tribes engaged in fishing, hunting and gathering of food, as well as access to historical fishing grounds and stations as identified in treaties and other documents. Because many of these U&A areas are co-located in lands and waters owned or used by the Navy in the Navy Region Northwest area of responsibility, government-to-government consultation with potentially affected tribes is required when Navy proposed actions have the potential to significantly affect tribal rights, resources and Indian Lands.

THE PARTNERSHIP ENSURES THAT THE TRIBES HAVE ACCESS TO NAVMAG INDIAN ISLAND'S BEACHES TO HARVEST SHELLFISH, FOR THE PURPOSE OF SUBSISTENCE AND PRESERVING TRIBAL TRADITIONS.



THE BASICS ABOUT

Naval Magazine Indian Island

AVMAG Indian Island is the only deep water ammunition port on the West Coast. It is responsible for the joint transfer shipment of ammunition among the five branches of the military services. The base is also a critical site for joint training exercises, including waterborne security and logistics mobilization drills. Not only do NAVMAG Indian Island employees provide an invaluable service to the fleet, they also go out of their way to be good stewards of the environment by improving and protecting tidal salt marshes, building a shoreline protection system, removing creosote logs off the beaches and remediating contaminated sites from historic World War II operations. These projects resulted in the removal of NAVMAG Indian Island from the National Priorities List by the U.S. Environmental Protection Agency in 2005. This achievement makes NAVMAG Indian Island the only Navy installation on the West Coast to be

completely removed from this list. NAVMAG Indian Island takes its name from the famous British Explorer Captain George Vancouver who dubbed this land mass "Indian Island" after observing a seasonal village site of the Chemakum tribe on Walan Point during his exploration of Puget Sound in 1792. This Walan Point area is now the present day location of the Navy's Ammunition Wharf.

For more information on NAVMAG Indian Island, visit www.cnic.navy.mil/ Indian_Island/index.htm.



Viviane Barry, shellfish program manager for the Suquamish Tribe Fisheries Department, shares her subject matter expertise with Cmdr. Gary Martin, NAVMAG Indian Island commanding officer. MC2 Scott McCall

harmful algal blooms, which have been observed to be toxic to marine animals.

"One of the main goals of the tribes is to maintain the water quality where the water quality is good enough where you can have open

harvest areas," said Barry. "Second is to improve the water quality in areas where there's pollution. If you can identify the pollution sources and correct them, you can eventually open up more beaches."

The local tribes participating in the project are the Suquamish Tribe, the Port Gamble S'Klallam Tribe, the Jamestown S'Klallam Tribe, and the Lower Elwha Klallam Tribe.

CONTACT

Liane Nakahara Naval Magazine Indian Island 360-396-1630 DSN: 744-1630 liane.nakahara@navy.mil Culinary Specialist 2nd Class Anthron Shuler spreads manila clams on the shore of NAVMAG Indian Island. MC2 Scott McCall

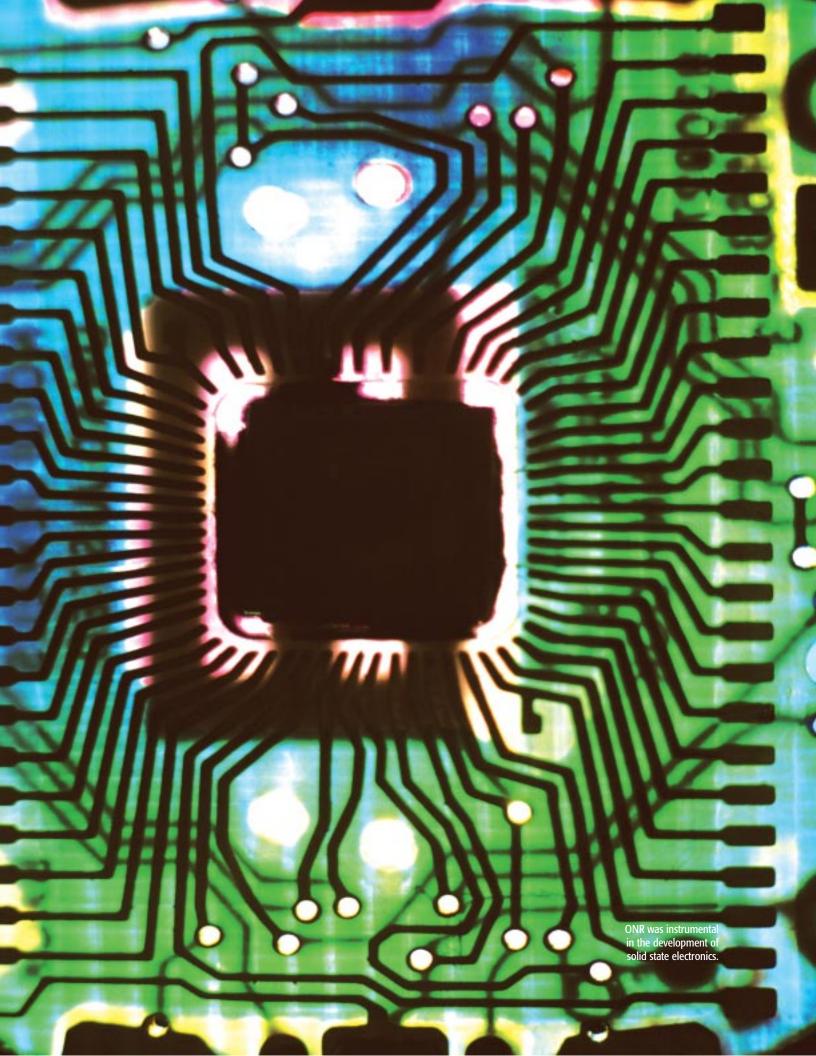
"WE WANT TO BE GOOD NEIGHBORS.

WE WORK WELL WITH THE TRIBES

AND WE ALWAYS HAVE."

—CDR GARY MARTIN, NAVMAG

INDIAN ISLAND COMMANDING OFFICER



Spotlight on the Office of Naval Research

Rear Admiral Nevin Carr & Dr. Richard Carlin Discuss Past, Present & Future Investments in Energy





n 19 September 2011, Rear Admiral Nevin Carr, Chief of Naval Research at the Office of Naval Research (ONR), and Dr. Richard Carlin, Head of ONR's Sea Warfare and Weapons Department spoke with Kenneth Hess from the public affairs staff at the Chief of Naval Operations Energy and Environmental Readiness Division (N45) about ONR's past, present and future investments in energy.

CURRENTS: Good afternoon Admiral Carr. Could you please give us a brief summary of your background and experience?

REAR ADMIRAL NEVIN CARR: I'm a surface warfare officer. I've been in the Navy for about 34 years—most of which has been spent at sea—deployed on cruisers and destroyers. So like Admiral Cullom, that's the lens through which I view energy conservation—from first-hand experience. That means being able to extend the legs of our ships at sea and our aircraft in the air, and to get more tactical use as well as more

independence from foreign supply.

NRL is the interface between science and technology and Navy and Marine Corps warfighting needs.



CURRENTS: Give us an overview of the mission and vision of ONR.

ADMIRAL CARR: ONR traces its roots back to the Navy Research Laboratory (NRL) that was created around 1916. ONR was created in 1946. NRL began as a mechanism for the Navy to get visibility into and pull technology solutions from the world of science and technology (S&T) with a Navy-relevant perspective. It's been tremendously beneficial over the years. NRL has produced life-changing technologies like the Global Positioning System (GPS). The early days of research into nuclear propulsion also began there, before it was handed off to the Naval Sea Systems Command (NAVSEA), where it resides so well today. NRL is the Navy's corporate laboratory and the interface between S&T and Navy and Marine Corps warfighting needs.

This office was created in 1946 in the aftermath of World War II to maintain the momentum and the connectivity that was created during the war

on the Office of Naval Research

REAR ADMIRAL CARR led the Office of Naval Research from December 2008 through November 2011, and plans to retire from the Navy in January 2012.

Rear Admiral Matthew Klunder took over as Chief of Naval Research on 17 November 2011.

effort when the world of S&T really came together to support the country.

ONR actually pre-dated the creation of the National Science Foundation (NSF). So for a number of years, the Navy's research effort effectively functioned as the nation's national science foundation. Later on, when NSF came into being, we handed off a lot of what we used to do to them although we still work that interface with NSF.

CURRENTS: What have been your priorities for ONR?

ADMIRAL CARR: My priorities have always been to make sure that we're investing in the very best science that gives us the most return on our investment—and to make sure that we're talking closely with the Navy and Marine Corps. We want to make sure that whatever we're doing meets their needs. And there probably is no better example of that than in power and energy.

ONR has nine focus areas that drive our research. One is dedicated completely to power and energy. Our focus there is on increasing energy security and providing more efficient power and energy systems.

Secretary Mabus has been a leader, along with Admiral Roughead and Admiral Cullom, in opening the Navy's exploration of alternate sources of energy as well as different ways of using and conserving energy. And that fits very nicely into our mission which is to look for areas in the world of S&T where we can support those requirements.

CURRENTS: Could you give us an example of how you're helping to achieve those goals?

ADMIRAL CARR: A lot of our focus most recently has been on alternative fuels. As the Navy moves to adopt alternative fuels, whether they're biofuels or other sources, we need to ensure that whatever chemical

The Basics About the Office of Naval Research

ONR PROVIDES THE science and technology necessary to maintain Navy and Marine Corps technological advantage. Through its affiliates, ONR is operational in 50 states and 70 countries as well as 1,035 institutions of higher learning and 914 industry partners.

President Truman established ONR in 1946 to "plan, foster and encourage scientific research in recognition of its paramount importance as related to the maintenance of future naval power, and the preservation of national security."

Some of ONR's accomplishments include SEALAB I and II—the world's first underwater living habitats-which were launched in the mid-1960s. SEALAB enabled researchers to live underwater for as many as 30 days. In 1981, ONR created the Navy Operational Global Atmospheric Pressure System, the Navy's first global numerical weather prediction system—used today by the Department of Defense and civilian forecasters throughout the world. More recently, ONR has developed such diverse technologies as:

- 1. Naval applications for autonomous unmanned undersea vehicles and unmanned aerial vehicles
- 2. Sand abatement technology to counter improvised explosive devices
- 3. QuickClot™—an agent used to reduce soldier mortality from blood loss

In 2008, ONR conducted a record-setting fire of an electromagnetic railgun. The

technology uses high power electromagnetic energy instead of explosive chemical propellants to accelerate a projectile along a pair of metal rails. The resulting launch propelled the projectile further and faster than any gun in history.

When it comes to patented discoveries and inventions, according to a 2010 report published by the Institute of Electrical and Electronics Engineers, the U.S. Navy holds the number 1 ranking among all international government agencies—underscoring the fact that Navy research laboratories and partnerships are focused on producing innovations and intellectual property that Sailors and Marines depend on.

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Spotlight on the Office of Naval Research

energy source that we include is compatible with our existing infrastructure. A large part of our focus has been on ensuring that compatibility—testing the fuels to make sure that they can co-exist with existing fuels and infrastructure. Our job is to make sure that the fuels the Navy is looking at are viable, compatible, and will be there.

number of steps that we can eliminate. Take legacy gun systems for example. We have to manufacture chemical propellants for projectiles then package, transport, store, protect, load, and use them. So if you could get to an elec-

trical environment where you convert energy



The Navy is heavily involved in stimulating and guiding the market, but ultimately we expect to follow the market.

DR. RICHARD CARLIN: I think it's very important to keep in mind that a lot of the work we do is to directly support the Secretary's energy goals. There has been a strong emphasis on biofuels, but as Admiral Carr pointed out, regardless of where everything goes, we're prepared. Biofuels are important because they are sustainable.

We've teamed with the U.S. Department of Agriculture to conduct some biofuels research in support of the Secretary's memorandum of understanding.

ADMIRAL CARR: The generation of energy that we use begins with fuels. But it doesn't end there. We also look across the spectrum of energy to include how we convert the chemical energy in fuel into mechanical, thermal or other forms of energy that we use. That might mean more efficient turbines that burn at hotter temperatures or innovative ways to extract more energy. It means looking at ways we manage energy once it's generated. We're very interested in

Dr. Richard Carlin.

an all-electric architecture for a ship. If you can do that—if you can convert energy one time from the chemical energy in the fuel to your end-use form of energy—that's very efficient. For example, if we can convert the chemical energy in fuels to kinetic energy out of the barrel for a projectile that we launch electromagnetically, there are a

one time into electricity and directly

to kinetic energy for a projectile, the magazine could conceivably be the safest place on the ship—because all of the energetics are moved out of the magazine and into the fuel tanks.

There are lots of other advantages in an electric ship environment. We are working very closely with NAVSEA and Program Executive Office-Ships to explore the best ways to do this—to manage the energy electrically aboard the ship for use in sensors, weapons, propulsion, and hotel services (e.g., sleeping quarters, food, water, personnel hygiene, etc.). In fact, Dr. Carlin talked about this at a recent electric ships research and development consortium.

DR. CARLIN: As Admiral Carr pointed out, an important piece of this is the need to move forward from fuels generation and distribution to the use of those weapon systems. We don't expect to be changing our infrastructure. And the Navy is heavily involved in stimulating and guiding the market, but ultimately we expect to follow the market. The generation, the distribution, the power densities that are required, the speed at which these things have to operate, endurance—these are very challenging for Navy systems to operate properly. We've had to take the lead in terms of developing a lot of these technologies and taking advantage of the work already being done in the market.

The electric ships research and development consortium was established a number of years ago to provide a pipeline of future power electronics engineers for the Navy. That was back in the days when power electronic engineering was really quite suppressed throughout the country, when everybody went to circuit board development. So the consortium was established to address the unique aspects of electric

on the Office of Naval Research

A Brief History of the Global Positioning System

THE SEEDS FOR what became the GPS were planted in 1957 when the Soviet Union launched the Sputnik satellite. Scientists

immediately recognized that this "artificial star" could be used as a navigational tool.

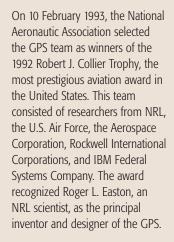
In the 1960s, NRL and the Aerospace Corporation independently developed concepts for systems that could provide precise, allweather, real-time, worldwide navigation information 24 hours a day. In 1973, NRL's program merged with the Air Force program to form the Navstar GPS program.

The first satellite in the Navstar GPS was launched in 1977. In more than 700 air, land, and sea tests conducted between 1977 and 1979, the satellites exceeded all

performance requirements and affirmed the system's extraordinary precision.

The satellites transmit a constant signal generated by on-board atomic clocks, which are so precise that they gain or lose only one second every three million years. Users equipped with a receiver/processor simply lock onto the signals of four satellites,

and latitude, longitude, altitude, and velocity are automatically computed "within meters" by triangulation.



Though invented for defense purposes, such as targeting pinpoint strikes and positioning

troops, the 24-satellite GPS system now serves many peacetime functions such as air traffic control, scientific surveying, harbor navigation, measurement of ocean waves, and of course, assisting drivers in locating their destinations.

large plant, in terms of the solid state electronics that

they've developed. (Note: The ABB Group is comprised of

National Park Service, www.nps.gov/gis/gps/history.html Navy Research Laboratory, www.nrl.navy.mil

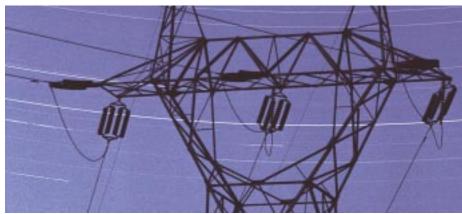
ships—the architecture, the movement into directed energy, to advanced radar and the unique electronics that you have to have. In the process of doing that, we worked with the Defense Advanced Research Projects Agency (DARPA) to develop silicon carbide systems—solid state

several power and automation technology companies that enable utility and industry customers to improve their electronics. Some of the solid state electronics

lavigation

Silicon carbide has huge potential to change the amount of electricity we have to use on the far end.

you see out there now were funded by ONR. In fact, we visited the ABB Group a while back and they thanked us for our contribution to their



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Spotlight on the Office of Naval Research

performance while lowering environmental impact. They operate around the world in more than 100 countries. Visit www.abb.com for more information.)

ADMIRAL CARR: When you talk about power and energy, you're talking about fuels and sources from which we get

energy—the processes by which we convert that into energy—engines, turbines, and so on. In the middle is how you manage that energy. So we look across that entire spectrum. Dr. Carlin just mentioned silicon carbide, which has huge potential to change the amount of electricity we have to use on the far end.

ONR's Nine Focus Areas

THE NAVAL SCIENCE and Technology Strategic Plan describes how ONR will enable the future operational concepts of the Navy and the Marine Corps. The plan outlines nine S&T focus areas derived from naval capability needs. The vision for each of the focus areas are:

1. Assure Access to the Maritime Battlespace

Assure access to the global ocean and littoral reaches and hold strategic and tactical targets at risk. Sense and predict environmental properties in the global ocean and littorals to support tactical and strategic planning and operations. Improve operational performance by adapting systems to the current and evolving environment.

2. Autonomy and Unmanned Systems

Achieve an integrated hybrid force of manned and unmanned systems with the ability to sense, comprehend, predict, communicate, plan, make decisions and take appropriate actions to achieve its goals. The employment of these systems will reduce risk for Sailors and Marines and increase capability.

3. Expeditionary and Irregular Warfare

Naval warfighters of the future will possess the full spectrum of expeditionary kinetic and non-kinetic capabilities required to defeat traditional threats decisively and confront irregular challenges effectively.

4. Information Dominance

Enable the warfighter to take immediate, appropriate action at any time against any desired enemy, target or network by assuring that autonomous, continuous analyses of intelligence, persistent surveillance and open information sources have, at all times, optimized the possible courses of action based on commander's intent.

5. Platform Design and Survivability

Develop agile, fuel efficient and flexible platforms capable of operating in required environments. Enable manned and unmanned naval platforms and forces to operate in hostile environments while avoiding, defeating and surviving attacks.

6. Power and Energy

Increase naval forces' freedom of action through energy security and efficient power systems. Increase combat capability through high energy and pulsed power systems. Provide the desired power where and when needed at the manned and unmanned platform, system and personal levels.

7. Power Projection and Integrated Defense

Enhance extended-range power projection capabilities and integrated layered defense by improving manned and unmanned naval platforms, enabling forces to complete missions in hostile environments by avoiding, defeating and surviving attacks. Demonstrate improvements in standoff indirect precision fires on time-critical targets, while limiting collateral effects through the use of electromagnetic kinetic projectiles, hypersonic missile propulsion, scalable weapons effects, directed energy and hypervelocity weapons.

8. Total Ownership Cost

Support the goal to reduce Total Ownership Cost (TOC) by developing and aiding the insertion of technology to reduce platform acquisition cost, reduce lifecycle and sustainment costs and achieve crew manning requirements. TOC includes all costs associated with the research, development, procurement, operation, and disposal of platforms, combat systems and associated elements over the full lifecycle.

9. Warfighter Performance

More effective point of injury care for Sailors and Marines. Enhanced health and warfighter performance both afloat and ashore. Highly efficient and effective human-system performance aided by new technologies created through the exploitation of biological design principles. Enhanced warfighter and system performance with reduced personnel costs as a result of the right information being provided to the right people with the right skills at the right time in the right jobs.

To read the entire plan, visit www.onr.navy.mil.

Spotlight on the Office of Naval Research

There are other ways we're looking at reducing loads so that ships and aircraft can use less energy—slippery paints for ship bottoms, for example, that NAVSEA is now using. Electric weapons are a different way of using energy on the far end. If you look at all the energy that had to come together to put one five-inch projectile in the barrel with a propellant charge behind it, think of what you would have saved by converting energy one time. Now, like the compatibility of fuels, any future systems like this—whether they're future electronics that are silicon carbide-based, or future guns like the ones I'm describing—aren't going to happen overnight. There will be a long period of transition. And so as we look across the spectrum of energy usage, we are very mindful of where we can realize the most gain in the near term. We're very mindful of return on investment. There are some very interesting long-term solutions out there highly technical, very complex but very tempting. At the end of the day, fuel is really just an arrangement of carbon, hydrogen, and oxygen atoms. You can rearrange those atoms pretty much any way you want. It just takes energy to do that. So there may come a day

Sometimes we make the most of our investments by being a fast follower.

when we can manufacture fuel from other

sources. But that's a long way off.

But it's something we see some potential for. There are methods today—Fisher Tropsch is one of them—to do this. They require more energy into them than you get out of them. You never gain energy. But if you can use energy from an abundant source to do this, you might be able to gain advantage in the overall energy management and usage equation.

Now we're not just focused on ships. We're also collaborating with DARPA, the Air Force, and the Office of the Chief of Naval Operations on an aircraft engine. We're focused on supporting shore energy usage, which is a huge component of the energy that we use and one of the main thrusts of Secretary Mabus' energy goals. It's also one of Dr. Carlin's favorite subjects.

CURRENTS: Any specific technologies to share in that arena?

DR. CARLIN: We help to drive the technology forward and that's a very important goal of ONR. We're early adopters as well. We push and pull. Take fuel cells as an example. We've spent lots of money on research and now we're starting to take that in. In our unmanned systems, we have programs that are looking at some early pre-commercial technologies and how they might be applied for Navy systems such as General Motors vehicle fuel cell technology for manned undersea vehicles and small, light fuel cell units from Protonex for unmanned air vehicles. A very important aspect of this is the actual return on investment—pertaining especially to shore facilities where many technology options are available and many new ones are being developed. There are a lot of incredible technologies to choose



Admiral Carr speaks with Steven Marlin (left) and Richard Rosado, from General Motors, about an ONR fuel cell vehicle during New York Fleet Week in 2011.

from. How do you make those decisions? You need to make sure when you make those choices, the investments that you're making have a long-term payoff in terms of energy savings. We have big challenges associated with the use of energy systems in the Pacific region—humidity, the tropical environment, rain, and so on—pose unique challenges. So how well these new technologies actually function in those environments and what return we will get on our investments, has yet

on the Office of Naval Research

to be proven over a 30 to 40 year time span. We are making some of those evaluations from the different alternative energy resource areas.

ADMIRAL CARR: While we ensure that we are investing Navy and Marine Corps technology dollars in the smartest possible way, we won't necessarily be on the leading edge of every new discovery. Sometimes we make the most of our investments by being a fast follower. In the power and energy environment, there are a lot of technologies that are being driven by the commercial market from which we can benefit. The Navy

has been a leader in some areas—biofuels and a willingness to push the edge of our own known technologies and requirements to name a couple. But there are other areas including fuel cell research where the automotive industry has been taking the lead.

Once we unlock the promise of unmanned vehicles, they're going to operate for very long periods of time without human intervention.

> They're not quite there yet but they've invested millions of dollars and millions of hours of research into developing fuel cells. That has provided us with a head start into adapting fuel cells developed by the automotive industry for unmanned underwater vehicles. Because fuel cells are efficient at generating low levels of electricity over a long period of time, they may prove to be a very powerful

> application for the long duration, unmanned underwater vehicle missions.

> We expect to get up to 90 days from hydrogen fuel cell applications. In fact, we have a fuel cell up and running over at NRL that we're working on in collaboration with General Motors. Unmanned vehicles are a very interesting application for power and energy. Once we unlock the promise of unmanned vehicles, they're going to operate for very long periods of time without human intervention. They are going to need to have a power source and be

very efficient in the use of that electricity. We're attacking that problem from both ends of the spectrum.

The silicon carbide types of electronics that Dr. Carlin mentioned-more efficient sensors, more efficient batteries to store the energy—all these things are being driven by the uniquely challenging aspect of unmanned vehicle development. However, they will all provide benefits that can be scaled up to larger applications like ships, aircraft, tanks, and shore energy. So we don't have to invent everything. Sometimes it's smart to leverage somebody else's invention.



Dr. Peter Matic, head of the multifunctional materials branch at NRL, explains his work to Admiral Carr at the Navy League Sea Air Space 2010 Exposition.

CURRENTS: You've touched on crossover with industry.

ADMIRAL CARR: In something like power that's ubiquitous, there is a lot of crossover. Sometimes there's duplication of research. Not all duplication is bad—as long as we understand that duplication. A rich competition of ideas is your best hedge against some of those ideas not panning out.

CURRENTS: Talk about some missions that ONR and N45 are collaborating on—or areas that might be ripe for collaboration.

ADMIRAL CARR: We are very closely coupled with N45. They're a resource sponsor and we're a technology organi-

on the Office of Naval Research

zation. Admiral Cullom and I are Naval Academy classmates. We grew up in the surface Navy together and we communicate quite a bit about this and other issues. As I mentioned, we have nine focus areas that drive our research. One pillar is dedicated exclusively to power and energy. Admiral Cullom is a co-chair for that team. Rich (Dr. Carlin) does a lot of our point work with N45.

DR. CARLIN: We're very supportive of what N45 has been doing over the years and directly support them with technology. As members of Task Force Energy, we provide the technology piece. Other groups represent various compo-

nents of the acquisition community. N45 has responsibility for developing the energy portfolio for the Navy. They have done a tremendous job of pulling those pieces together and establishing a structure that brings all of those resources together while we provide the S&T piece.

We have an extensive outreach effort to inspire and fund young students with naval-relevant content

We see biofuels as one of the strongest links across Navy components. Program folks from the Naval Air Systems Command and other system commands are making sure that we continue to make progress toward the goals that Secretary Mabus has set for the Green Fleet.

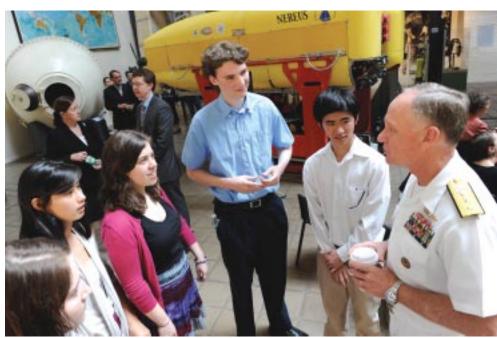
The Future Naval Capabilities (FNC) piece mimics what is being done in some of those same working groups working on the broad spectrum of issues for which N45 is responsible as a resource sponsor. Those same working groups are working with the FNC group which is making investments in S&T. If we know what those longer term needs are, the resource sponsors and the acquisition process—through the Task Force Energy process laid out by N45—can help guide those S&T investments. It's truly a team effort.

ADMIRAL CARR: And N45 and ONR joined hands in 2009 to sponsor the first Naval Energy Forum. (Note: The third

annual Naval Energy Forum was held 13-14 October 2011. For more insights into the results of the forum, see our article entitled, "Highlights of a Charged Energy Awareness Month" on pages 26–28 in this issue of Currents.)

CURRENTS: Could you give us the bottom line on how and why power and energy are important to the Navy?

ADMIRAL CARR: It's all about the whole energy spectrum. It's about generation and it's also about storage, management, and usage. We try to work our way across that spectrum.



Admiral Carr discusses undersea science and technology with students from Wilson High School after an awards ceremony honoring retired Capt. Don Walsh, first commander of the Navy bathyscaph Trieste.

Finally, as the country and the Navy and Marine Corps face our energy challenges, it's critical that we continue to draw from our pool of highly technically skilled young scientists and engineers. A lot of our workforce is aging. We will need to replace much of our workforce in the coming years and the supply of students in this country for science and technology, engineering and math is not keeping up with the demand. So we have an extensive outreach effort to inspire and fund young students with Naval-relevant content. We want to encourage them to embrace technical subjects and consider a career supporting the Navy in uniform or as an engineer or scientist. 🗘

U.S. Navy photos by John Williams.

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DoD Environmental Data Quality Workgroup to Host 9th Annual Workshop

Abstracts Due by 13 January for March 2012 Event

The Department of Defense (DoD) Environmental Data Quality Workgroup (EDQW) is pleased to announce the 9th annual DoD Environmental Monitoring and Data Quality (EMDQ) Workshop to be held 26–29 March 2012 at the Hyatt Regency in La Jolla, CA.

This workshop is open to all interested members of the environmental community involved with DoD sites or projects. This includes representatives from the services, other federal agencies, state, local, and tribal governments, academia, and the private sector. It will include technical training sessions, technical presentations, a poster session and networking opportunities with members of the environmental community.

The first two days of the EMDQ workshop are devoted to training. The tentatively scheduled training for this year's workshop includes the following sessions:

- The DoD Quality Systems Manual
- Vapor Intrusion
- The Interstate Technology and Regulatory Council's Incremental Sampling Methodology Guidance Document
- Environmental Statistics
- Data Validation

In order to make this workshop successful and provide the most up-to-date, relevant information to attendees, workshop organizers rely on the environmental and DoD communities for

qualified and informative speakers for our technical presentation sessions. In this capacity, workshop organizers are requesting one-page abstracts be submitted (through 13 January 2012) on the following topics:

- Emerging Contaminants
- Vapor Intrusion
- Military Munitions Response Program
- Laboratory Analysis and Performance
- Data Management and Sharing
- Project Planning/Implementing
 Uniform Federal Policy-Quality
 Assurance Project Plans
- Data Quality and Usability
- Field Sampling and Analysis
- Quality Systems Implementation
- Environmental Monitoring for Remedial Technologies
- Innovative Methods for Chemical Sensing and Monitoring Technology

To register for the EMDQ workshop, visit www.regonline.com/2012EMDQWorkshop or www.navylabs.navy.mil/DoDChemistmeeting.htm.

CONTACT:

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Diego Garcia: Steward of the Chagos Islands

Volunteers Clean Up Beaches on Diego Garcia in the British Indian Ocean Territory

TWO-HUNDRED AND forty U.S. Sailors, Airmen, British Royal Marines Commandos and base contractors volunteered to clean up Diego Garcia, British Indian Ocean Territory beaches on 2 September 2011.

Volunteers collected approximately 5,000 pounds of trash that washed up along six miles of beach in the southeast quadrant of the island. The purpose of the cleanup was to promote energy conservation, environmental and recycling awareness, and to prepare the beaches for seasonal nesting of endangered sea turtles.

"As tenants of a maritime protected island here in the British Indian Ocean Territory, it's important that we respect and work with our gracious host, the British government, in preserving this environment," said U.S. Navy Support Activity, Diego Garcia Commanding Officer, Capt. David L. Tidwell. "Although we live here, this isn't our island—we're just visitors. Obviously the responsibility falls on us to clean up the trash we produce, but we must also maintain the delicate balance of this environment for its natural inhabitants who rely on this island for their survival. Being stewards of the environment is also one of the Navy's missions."

According to Cmdr. Victor Velasco, Diego Garcia Public Works Officer and one of the event coordinators, base residents and USS Emory S. Land (AS 39) Sailors volunteer to clean up different beaches a few times throughout the year.

"Our goal is to ensure local wildlife, such as the great green and hawksbill sea turtles, have the ability to come ashore and nest here." Velasco said.

Velasco expected volunteers to collect everything from plastic bottles,

containers,
fishing buoys
and nets, to
discarded trash
from vessels travelling
the sea lanes, and gear

the sea lanes, and gear and equipment that may have been blown overboard. Due to recent tsunamis in the surrounding regions, Velasco also suspected that volunteers will see a wide variety of trash.

"I was excited to volunteer because this was the first time I was able to see this side of the island," Master-at-Arms Third Class Petty Officer Sonya L. Parker said. "The beach and the





Two-hundred and forty U.S. Sailors and Airmen, British Royal Marines Commandos and contractors volunteered to clean up Diego Garcia, British Indian Ocean Territory collecting more than 5,000 pounds of trash to promote environmental and recycling awareness, and to prepare the beaches for the seasonal nesting of endangered sea turtles.

MC3 Benjamin Malvezzi



A crab uses a hollowed-out golf ball that washed ashore as its shell. The golf ball is just one example of the wide variety of trash collected as part of the 2 September beach cleanup.

U.S. Navy photo by Mass Communication Specialist 3rd Class Benjamin Malvezzi

ocean are beautiful, but I was really surprised to see just how much trash was washed ashore, and how far up onto shore we found it."

"There was definitely more trash than I thought there would be," Parker continued. "We were briefed on what we could expect to find, but I was still amazed at some of the things we actually found. I found a lot of flip flops, a few light bulbs and even a cat mat. But I was really surprised when we found a bike tire."

With the completion of this successful cleanup effort, plans have already begun for the next one.

"We had a great turnout and everyone was safety compliant," Nestor Guzman said. Guzman, a Diego Garcia contractor, was another event coordinator. "We strive to continue the beach cleanup that started back in 1997. We believe island support, coordination, cooperation and safety are the keys to ensuring a successful event for years to come."

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Highlights of a Charged Energy Awareness Month

Encouraging Culture Change Across the Globe

OCTOBER WAS ENERGY Awareness Month. Why should that interest you? Well, can you imagine a day—or longer—without your cell phone? Probably not, but some of the energy awareness activities in October

brought home the disquieting message that our wasteful energy practices, coupled with our increasingly interdependent world, highly susceptible electric grid, and increasingly frequent cyber attacks all work

together to amplify vulnerabilities that cause widespread and long-term power outages, throwing us back to the 19th century, technologically.

Fortunately, as Rear Admiral Phil Cullom, Director, Energy and Environmental Readiness (OPNAV N45) pointed out at the 2011 Naval Energy Forum held 13–14 October 2011 in Washington, D.C., "There's still time to get it right and secure our energy future, but no one group—not the military and not industry—can do it alone. We must leverage our combined skills and resources and form an enduring synergy. Each of us must continue doing his or her part."

Interested in doing your share to secure our energy future? Rear Admiral Cullom explains how: "To change our energy future, we must all begin now to change our energy culture. We have to alter the way we think about energy. We must develop and practice frugal habits; we must conserve energy, not just

Boatswain's Mate 2nd Class Kerik Vargas switches his lights to high efficient light bulbs as part of an energy conservation initiative at Commander, Navy Region Hawaii (CNRH). MC2 Mark Logico



There's still time to get it right and secure our energy future.

-Rear Admiral Phil Cullom

when it's convenient—but at all times. Thoughts drive actions. Actions become habits. Habits become lifestyles."

Encouraging Culture Change was the basis for many of the Navy's 2011 Energy Awareness Month activities. From Singapore, Sasebo, Diego Garcia, Yokosuka, Atsugi, and Guam, to all across the United States, hundreds of Department of the Navy bases and community events reinforced the fact that if we want to turn the tide and become an energy inde-

pendent nation, we must all change our mindset and lifestyles to value energy as a strategic resource.

Energy Awareness Month was celebrated globally in a wide-variety of ways.

- Atsugi's recycled airplane contest (airplanes made of recycled/ reusable items), solar-powered band concert, and base family fun-fest.
- Diego Garcia's 5-K Energy Fun Run, picnic, and beach clean-up day.

- Finegayan's (Guam) energy fair with numerous exhibits, solar cars, solar powered food preparations, and give-aways.
- Guantanamo's base energy conservation fair that featured energy awareness give-aways, music, food, and school-age art competition.
- Sasebo's "Zombie Stomp" was part of a fun day of energy activities for the whole family, including numerous booths, static displays, and activities that heightened energy awareness.



Naval Facilities Engineering Command Hawaii is upgrading the wastewater treatment plant at Joint Base Pearl Harbor-Hickam by removing the floating steel roofs and replacing them with fixed aluminum dome covers. The new covers will help capture methane gas for future energy projects and use it as an alternative fuel source. Denise Emsley

At home in the United States, Energy Awareness Month was celebrated as well.

- Corpus Christi's Energy Awareness Appreciation Day, including energy awareness essay competitions and awards presentations.
- Gulfport's electric car static display, energy conservation activities for youth, and various energy projects including energy management tool displays.
- Joint Base Pearl Harbor-Hickam's Energy Awareness Fair, youth activities, and training event included visits by BRITE, the energy mascot.
- Kings Bay's (student) energy conservation essay contests, energy conservation technology (science) competition, and family picnic.
- Mayport's "All-Things Energy" fair with workshops for all ages, training for the military and the community, games for children, and a visit from BRITE, the energy mascot.
- Pensacola's electric dune buggy display at a base energy fair, complete with a 5K fun run, prizes, and give-aways.

While Energy Awareness Month is over, we are still responsible to do what is right, to do what should and must be done to secure our nation's energy independence. Stay inspired all year round. Embrace a frugal energy lifestyle, but if you ever find yourself needing inspiration or wanting to learn more about the latest Naval

Seaman Andrea Gonzales maneuvers the biodiesel ferryboat #39-5 Jackson C. Pharris as she transports visitors to the USS Arizona Memorial. Sailors assigned to USS Arizona Memorial Detachment transport as many as 4,500 people to the historic site every day on biodiesel-powered boats. MC2 Mark Logico

energy and environmental activities taking place worldwide, visit www.greenfleet.dodlive.mil/ or http://facebook.com/NavalEnergy. Visit often and follow Secretary of the Navy Ray Mabus' dynamic and rapidly evolving energy charge that is best explained by the message on his favorite Navy recruiting poster: "Sometimes, we follow the storm to the shore. Sometimes, we are the storm!"

CONTACT

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orents thrives on greenfleet online

Visit the Magazine on the Navy's Energy, Environment & Climate Change Web Site

Currents has settled into our new home on the internet—on the Department of the Navy's Energy, Environment and Climate Change web site—at greenfleet.dodlive.mil/currents-magazine.

This web site provides news and information about Navy programs to achieve energy security, practice environmental stewardship, and understand the potential challenges presented by a changing climate. These programs serve to increase combat capability and ensure mission readiness in the decades to come. And now *Currents* is there to promote these efforts.

You can do everything on our new web page that you used to do on our old web page:

- 1. Subscribe to the magazine
- 2. Submit story ideas
- 3. Browse an article or an entire issue (via PDFs or digital versions)
- 4. Access our annual calendar

We've also included quick and easy access to all of our social media sites including our Facebook, Twitter and Flickr pages.

But you'll want to update your browser to greenfleet.dodlive.mil/currents-magazine so that you have all of the latest and greatest information about the Navy's energy and environmental initiatives.





Spotlight on the Ocean Futures Society

Jean-Michel Cousteau Discusses the State of the World's Oceans & What Needs to Be Done to Protect Them



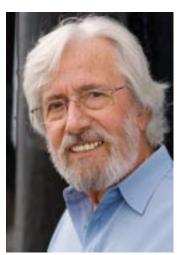


haring the spotlight in this issue of *Currents* is Jean-Michel Cousteau, founder of the Ocean Futures Society. On 19 March 2011, Kenneth Hess from the public affairs staff at the Chief of Naval Operations Energy and Environmental Readiness Division (N45) and Bruce McCaffrey, managing editor of Currents magazine, conducted this interview as one in a series of interviews with representatives from environmental non-governmental organizations (NGO). Mr. Cousteau spoke about his work, the state of the oceans, and what needs to be done to protect them.

CURRENTS: Many of our readers are likely familiar with your family name and some of the work that you and your father have done to explore the oceans, and educate people about the importance of protecting them.

What drives you to do this kind or work?

I had the privilege of being tossed overboard when I was seven.



Jean-Michel Cousteau. © Carrie Vonderhaar, Ocean Futures Society

JEAN-MICHEL COUSTEAU:

Well, first of all, I had the

privilege of being tossed overboard with a tank on my back when I was seven years old. That's when my exploration of the ocean began. It literally became something deep inside me that I only realized years later. It had something to do with the quality of life, and that I saw fewer and fewer fish and more and more garbage in the ocean. That is what has made me want to continue to support the philosophy of my father through our efforts at the Ocean Futures Society.

©Carrie Vonderhaar, Ocean Futures Society

CURRENTS: Who tossed you overboard?

COUSTEAU: My father did. He did that to my late brother too who was only four and a half at the time. My mother was there and diving became a family affair. Some families go up in the mountains to play in the snow, others go diving. In those days, we were probably the only kids that had this opportunity. We didn't know at the time, but we were very privileged.

CURRENTS: In this country, we would call that "sink or swim."

Spotlight on the Ocean Futures Society

The Basics about Ocean Futures Society

FOUNDED IN 1999 by Jean-Michel Cousteau, the official mission of the Ocean Futures Society is "to explore our global



ocean, inspiring and educating people throughout the world to act responsibly for its protection, documenting the critical

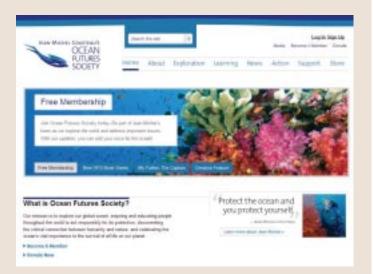
connection between humanity and nature, and celebrating the ocean's vital importance to the survival of all life on our planet."

Some of the issues that the Ocean Futures Society has been focusing on recently include:

- Toxic flame retardants in the ocean
- Alternatives to offshore drilling
- The health and protection of marine mammals
- Sustainable fisheries

The Ocean Future Society web site includes links to important environmental news stories, information about the Society's current or upcoming expeditions, and a Kids' Cove, where children can view videos of marine and freshwater animals and even learn the "real story" behind cartoon hero SpongeBob Squarepants.

Visit www.oceanfutures.org to learn more.



COUSTEAU: Well, at seven years of age along the shoreline in the south of France, we were in the water all the time, so we were not going to sink. But as a scuba diver, you have to sink. So maybe it's the other way around. Maybe it's "swim and sink."

CURRENTS: Can you give us some insights into your education?



COUSTEAU: I went through a traditional school program in France until the Calypso appeared in our family. My mother was more a sailor than my dad and she moved aboard the ship first. It became her home. She spent more time on the ship than my father, my brother and I combined. As a result, my brother and I were sent to a boarding school in Normandy for five years. During the holidays and vacations, we would join the ship wherever she was—another very privileged situation, particularly in those days when transportation was not as easy as it is today. My brother and I would either leave early or come back to school late. Our teachers called us the "little island birds" because we were not respecting the school schedule like everyone else did. We spent three or four months a year on the ship.

At some point, my dad decided he wanted to live on the water. He co-designed a submersible diving saucer which I believe was the first one propelled by water jets. He thought it was great to be inside a pressurized vessel, but he liked to feel, touch and sense things. So that's when he decided to

on the Ocean Futures Society

create the first underwater habitat, which was called Continental Shelf-One. I was in high school at the time and thought, "Humans are going to live underwater. So I'm going to be the first architect to build cities underwater." That was my obsession when I was 17 years old. When I finished high school, my dad said, "Yeah, why not?" So I looked for a school where I could learn marine architecture but found

> nothing. In fact, there are no marine architecture programs still today. So ultimately, I decided to enroll in a traditional architecture program in Paris. I'm a licensed architect in the European Union today. Then I worked at a shipyard. I felt that with these two disciplines—naval architecture and traditional architecture—I could be an expert in marine architecture. But I'm still waiting for my first

client.

I still use my education today whenever we make a film. Putting a film together is like designing a hospital, school or somebody's home. You have to understand where you want to go. You have bits and pieces, not necessarily in the right order, and you have to make it happen. That is what has led me to communicate with the public in the best possible way. We are visual creatures.

CURRENTS: You obviously feel that technology can better help us understand the ocean environment. Do you have other examples of that?

COUSTEAU: I know that today we're living in what I call the communication revolution. Every human being can be in touch with every other human being—whether rich or

> poor. I've been in places where you have one computer and 100 people looking at it—asking questions. When someone gets hurt on the other side of the planet, we know about it instantly. What's happening in the Middle East, what's happening

Whether you live on the ocean or on top of a mountain, we are all connected to the same water system.



Spotlight on the Ocean Futures Society

in Japan—we all know about it. That was not the case when I was a kid. Today we have opportunities to communicate with other people on the planet that we never had before. And we either misuse that opportunity or use it properly. When we do use it responsibly, it allows us to communicate with anyone on the planet—information than can help people improve their standard of living and better understand and respect our life support system—the oceans. Whether you live on the ocean or on top of a mountain, we are all connected to the same water system. If tomorrow you go skiing, you are skiing on the ocean. When you take a drink of water, you're drinking the ocean.

The oceans are our life support system. People didn't make those connections. But more and more, thanks to the communication technology that's available today, we can make people who have never seen the

Get them out there and they'll understand that our lakes and rivers are the roots of the ocean.

ocean understand how connected they are to it. That's what we do.

CURRENTS: What is the purpose of the Ocean Futures Society?

COUSTEAU: Well, the purpose of the Ocean Futures Society is to communicate. One way we communicate is through the production of television or other programs. The second way is through the educational system—go into the schools or get the kids out of the schools and get them wet. We do this so that they understand how connected they are to our lakes, rivers and oceans. The third way we communicate is via diplomacy—communicating with decision makers and providing them with the information that will help them make better decisions in either the business world or political arena—regardless of who is in place at the time. And that's why democracy and freedom is critical—so that information can be passed on. And I'm happy to say that today we're seeing a lot of that taking place.

CURRENTS: Talk about some of the specific challenges that you and your organization have been focusing on.

COUSTEAU: The first challenge is that the name Cousteau makes people think that we are rich. We are not a wealthy organization and are constantly struggling to meet our financial needs. There's a lot more we can do—but it's all dependent on having enough financial resources in place.

The other challenge we face is making sure that the educational system doesn't keep young people in the classroom. Kids are kept in the schools for all kinds of reasons—liability, financial and so on. Those kids really need to get out to feel,



sense and touch the real world. So when they go back to their classrooms, they'll understand what it's all about.

I used to take kids to Papua New Guinea. I couldn't do that today. We need to get kids out into the field. And all decision makers need to support that. The teachers are not against it, but they're confined to their classrooms. If we're going to do a good job of protecting the planet, we need for all current and future decision makers to understand that we depend upon nature for the quality of our lives.

CURRENTS: You seem to be suggesting that there needs to be a culture change of sorts so that our leaders understand that so much of education is outside the confines of a traditional classroom.

COUSTEAU: I don't think it's a cultural issue. I think we've been captivated or cornered by the system. And

Spothshit on the Ocean Futures Society

The Ambassadors of the Environment Program

ONE OF THE Ocean Futures Society's most important ongoing programs is *Ambassadors of the Environment* (AOTE), an educational program dedicated to engaging people of all ages with their natural environment.

The goal of AOTE is to "extract and distill lessons from nature and culture, using them to explore alternatives for a sustainable future and empowering participants to live more gently on our planet as *Ambassadors of the Environment.*"

AOTE holds programs all over the world for school groups, families and divers. In addition to having fun in the water, participants learn the basic principles of ecology, energy, waste, biodiversity and more. The program also fosters confidence and creativity in its students

the system can change. We have a program called Ambassadors of the Environment, where we have kids go out into the field with their teachers to feel, sense and touch. Get them out there and they'll understand that our lakes and rivers are the roots of the ocean. And that water comes from the ocean. It's all one water system—a pretty basic concept.

We have had a program on Catalina Island for many years now. To see a young boy or a young girl from downtown Los Angeles who lives 15 or 20 miles away from the shore see the ocean for the first time is pretty amazing. We need to be able to take those kids out of school, bring them to the island, and within three to five days, teach them how to swim and

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through team building and challenge activities such as rock climbing and high ropes courses.

For more information on AOTE, visit www.oceanfutures.org and click on "Learning."







on the Ocean Futures Society

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snorkel. In the evening, they can go and see the lobsters crawling on the ocean floor and watch sharks sleeping.

When we send that young boy or young girl back to his downtown Los Angeles school, he will talk to his friends, his neighbors and his family. He's a different person as a result.

There are a lot of people who still do not believe that climate change is an issue. They're wrong.

These kids will become the decision makers of the future.

CURRENTS: Can you talk about some of the other projects you're working on?

COUSTEAU: We took it upon ourselves, days after the oil rig explosion in the Gulf of Mexico to go there and spend almost two months in the region. I was in Prince William Sound 22 years ago. I know the Gulf is different, but the quantity of oil there is much, much larger. And the spill has not just impacted marine life but tens of thousands of people who have lost their jobs, lost their fishing boats, closed down their businesses and so on. These people have been profoundly affected by this catastrophe.

And nature will be punished for many, many years. We have learned from the local scientists that, in a typical year, three or four dolphins die in the area. This year, over 30 dolphins died—six to eight months after the spill. We don't know what else is happening there. We don't know what happened to the plankton. We don't know what happened to the shrimp. Are they going to be able to reproduce? We don't know what happened to the oysters, and the turtles that come and lay their eggs on the coastline. There are some very dramatic stories that we need to keep an eye on. To say it's over is a lie. It's not over. It's going to go on for decades.

We can do a better job of preventing these types of accidents. But when they do happen, we need to be prepared to face the consequences. In this case, we were not prepared. We took some shortcuts and were not prepared when things went wrong.

Climate change is another major issue. There are a lot of people, including decision makers, who still do not believe



that climate change is an issue. They're wrong. And it's not just me saying this—it's the scientific community. We are guilty for speeding up the pace of climate change.

We're going to pay the price for climate change. Hundreds of millions of people are going to have to move. Where's the infrastructure to support them? These are real issues that need to be addressed.

Because ocean currents are below the surface of the water and are therefore not visible to most observers, we don't care about them. But currents are the bloodstream of the ocean. Where are all those chemicals going when they flow into the Missouri, or the Mississippi, to the Gulf and the Caribbean into the Gulf Stream—all the way to the northern Atlantic and Europe? Because we don't see them, we don't talk about them. It's another critical issue we need to face.

CURRENTS: It's a real challenge getting people to pay attention to things that are not visible to them. It's really hard to keep those less visible things on the public agenda—they are not like an explosion at a nuclear plant or a river catching fire.

COUSTEAU: Well, you're right. At the same time, when you have a release of radioactive material, you don't see it, but we manage over time to scare people, particularly in Japan. There are other ways to make people concerned

Spothight on the Ocean Futures Society

about toxic materials, radioactivity, hazardous chemicals or heavy metals. When do we stop using the ocean as a universal sewer? It's our choice.

CURRENTS: Are there other emerging areas that you want to mention from an ocean policy perspective?

COUSTEAU: Well, the ocean covers 70 percent of the planet. We protect a very small portion of the ocean—less

than one percent of it—but we have protected 11 or 12 percent of our land. We need to do a better job of protecting the ocean. The Ocean Futures Society was involved in helping President Bush to protect what was at the time, the largest piece of ocean ever protected. The British have done better since then which is great, but it's still not enough. We need to do a lot more.

Coastal regions are very important to protect. They're

More About Jean-Michel Cousteau

THE SON OF ocean explorer Jacques Cousteau, Jean-Michel Cousteau has investigated the world's oceans aboard *Calypso* and *Alcyone* for much of his life.

He has produced over 80 films, received the Emmy, the Peabody Award, the 7 d'Or (a French television award), and the Cable Ace Award. In addition, Cousteau has been recognized for many "firsts" in a variety of endeavors.

In the first attempt ever to return a captive orca to the wild, Jean-Michel merged three non-profit organizations to form the Ocean Futures Society in 1999. The Society was dedicated to continuing research and care for Keiko, the captive killer whale of "Free Willy" film fame. In 2002, Keiko was returned to the wild, and the Ocean Futures Society changed its focus and evolved into a global "Voice for the Ocean."

Some of Jean-Michel's other accomplishments include writing a syndicated column carried in over 60 newspapers worldwide; leading the first undersea live video chat on the internet; and participating in a live downlink from the Space Shuttle Columbia to CNN to commemorate the International Year of the Ocean. In 2002, he became the first person to represent the Environment in the Opening Ceremony of the Winter Olympic Games in Salt Lake City.

In 2006, Jean-Michel's initiative to protect the Northwest Hawaiian Islands took him to The White House where he screened his PBS-KQED documentary, Voyage to Kure, for President George W. Bush. Inspired by the film, the president declared the 1,200-mile chain of islands featured in the film a Marine National Monument—at the time the largest marine protected area in the world.

Using his training in architecture, Cousteau has designed such projects as artificial floating islands, schools, and an advanced

marine studies center in Marseilles, France. In 1969, he led the transformation of a 100,000-square foot section of the *Queen Mary* into the Living Sea Museum in Long Beach, CA. He also directed the design and development of the Parc Oceanique Cousteau in Paris, an innovative public attraction to teach visitors about the ocean without displaying any captive animals.



Today Cousteau lives in Santa Barbara, CA. Following family tradition, he has involved his own children, Céline and Fabien, in his filmmaking endeavors.

For more about Cousteau, visit www.oceanfutures.org.

on the Ocean Futures Society

critical for food and for the reproduction of many, many species. They're also critical for the protection of the coastline from bad weather and tsunamis. Are we going to continue to cut the mangroves? Are we going to continue to allow the coral reefs to die? Those are critical places that are protecting us. Nature doesn't care. What about us?

Fishing is also an issue. I'm on the side of the fishermen. I don't want them to lose their jobs because we haven't managed the ocean properly. They are heading toward bankruptcy. We point fingers at fisherman and say they're overfishing but we're destroying the areas where they are fishing. We're polluting it, they're capturing it, then we're putting it on our plates loaded with toxins. We are completely nuts! That can change but it will take a lot of communication.

CURRENTS: Are there some areas that are ripe for collaboration between the Ocean Futures Society and the Navy?

COUSTEAU: My father was in the French Navy. I grew up among naval officers. So I have a lot of respect for the Navy. If anybody understands anything

If anybody understands anything about the ocean, the Navy does.

> about the ocean, the Navy does. But they're making mistakes just like everyone

else. But I think it can change very easily. We just need to better communicate.

We can work more closely with the U.S. Navy. Navies are using sonar for some very valid reasons—for security and protection—which I completely understand. Those tests are needed to identify enemy submarines. But there are places where this testing can be done where there are no marine mammals present. We've already indicated places where that can happen. Some of the answers we gotand not directly—were: "It's too far away." and "It's too expensive." I think the Navy can think longer term.

CURRENTS: Talk about your involvement with the National Ocean Council.

COUSTEAU: We're trying to help the educational system do a better job. And I think the National Ocean Council is doing a great job of that. We created an organization called the World Ocean Network (WON) which is connecting to a lot of these same institutions to communicate the importance of the oceans. WON is trying to get people to think globally. For example, the gray whale, on its longest migration, comes up along the coast of California, Oregon, Washington State, and then travels into Canada. There's nobody checking their pass-



ports when they enter another country. There are no borders for the gray whale. Borders are artificial things that we've created. So WON provides "ocean passports" for adults and children.

CURRENTS: Talk about how you and your organization interact with other environmental groups.

COUSTEAU: We interact with other environmental groups on a project-by-project basis. But we will only work with other environmental organizations that are

Spotlight on the Ocean Futures Society

not in conflict with people—breaking the law, being aggressive, insulting people—that is not acceptable to us. I don't disagree with their objectives. I just don't agree with the way they go about achieving them. If you break the law, it's anarchy. We will sit down with decision makers and team up with some NGOs on specific issues to try to make a difference. I have a lot of respect for the majority of them.

ships more energy efficient. Do these types of initiatives align with your perspective on how ocean vessels should operate and be built or maintained?

COUSTEAU: Well, of course the answer is yes. Most of the focus has been on cruise ships. There are 320 cruise ships circling the globe. While the media is focusing on cruise ships, which are doing a much better job of

CURRENTS: Do you have a vision for what you'd like the ocean to be like 50 or 100 years from now?

The day we have ten percent of the ocean protected is the day I will start to smile.

COUSTEAU: Well, the good news is that information is becoming more and more available. There is more and more information that is being provided to the school systems and to decision makers.

I was in Washington a while ago and we had some very nice conversations with folks from the Department of Inte-

rior, Department of Commerce, National Aeronautics and Space Administration (NOAA) and other federal agencies. Those people want to hear what we have to say. And I think that is very helpful. So in that sense, things are changing. But in our view, not fast enough. If you care about your children and grandchildren and you want them to have the same privileges that we had, we really have to preserve more of the ocean. The day we have ten percent of the ocean protected is the day I will start to smile.

CURRENTS: As you may know, the U.S. Navy has installed systems on our ships to keep plastic out of the oceans and manage other shipboard waste in environmentally responsible ways. We're also looking for ways to use fewer and less toxic chemicals for building and maintaining our ships and seeking new processes and technologies for making



keeping their junk out of the ocean, there are 165,000 other ships at sea 24-7. These are the ships that are causing the problems. This is where our focus should be.

When you look at the crew on board those ships, they have no education. Often the officers cannot communicate with the crew because of language barriers. Some of those ships sit in port for weeks and sometimes months. Their crews go to shore and they get into trouble because they have nothing else to do. They have very little money. We need to educate these people. We need to provide them with the right information and the U.S. Navy could do that—communicate with every human being on those ships. Why don't we have, in every port on the planet, free access to multi-lingual, audiovisual information about the ocean and what they can do to protect it? This is a dream of mine. We can provide those people with the

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materials that will help them change their behavior. People will change when they know what the right thing is to do. How can you change if you don't know? I think the U.S. Navy can be leading this effort, particularly during peace time, for other ships, wherever they are.

CURRENTS: You're saying that the cruise ships are doing the right thing but other commercial ships are not?

COUSTEAU: Any new cruise ship is equipped to do the right thing. Whether it's the storage of recyclables or the storage of oil and grease—they offload it in the right place and it's being reused. But some ships, many of which are not allowed in U.S. waters, discharge their bilges directly into the ocean. And then there's laziness. Not many years ago, pictures were taken of a crew throwing things overboard at night. Well, they got caught and were punished. And it cost the company a lot of money. So I don't think they're doing that anymore. But let's not focus on the cruise ships. Let's focus on the 165,000 vessels that are crossing the planet on an ongoing basis. Those are the ones that need to be educated. The U.S. Navy has aircraft carriers with better than 5,000 Sailors onboard. Are they aware of how they can protect the ocean? I don't know. That has a lot to do with leadership.

CURRENTS: The Navy trains all of its Sailors about sound environmental practices. Each Sailor goes through training courses to make sure they understand their environmental obligations while at sea.

COUSTEAU: If the U.S. Navy can train all of its Sailors, perhaps they can offer that same training to other navies of the world. There is no security or politics involved there. We can all help each other.

CURRENTS: In October of 2009, the Secretary of the Navy laid out five ambitious goals for conserving energy and transitioning away from fossil fuels. Are you aware of those goals?

COUSTEAU: I am aware that one of your ships has been propelled by fuel created from a one-cell algae plant. And I know that they have received quantities of that fuel for further testing although I'm not familiar with the results of those tests. Fuel from one-cell algae is the way we need to go—it's the fastest growing plant on the planet.

CURRENTS: The Navy has demonstrated an algae-based fuel in one of our riverine boats last summer. We also had a successful demonstration of our premier jet aircraft using a camelina-based fuel. We also ran a story in our spring 2011 issue about a collaboration between the Navy and NOAA to develop the algae-based fuel of the future. That might give you some insights into the type of thing that the Secretary of the Navy is asking us to make happen.

COUSTEAU: I look forward to reading about those efforts.

CURRENTS: We're also using sustainable energy sources on our bases such as solar, wind power, and geothermal,

The Navy & Algae-based Fuels

READ MORE ABOUT how the Navy's research, testing and use of algae-based fuels in two recent issues of Currents magazine. In our winter 2011 issue, "Navy Fuels Great Green Fleet Vision" details a full-power demonstration of a Riverine Command Boat powered by algae-based fuel. And in our spring 2011 issue, read about an underwater algae production project in "NASA & the Navy Developing the Fuel of the Future."

You can download a copy of either article at the magazine's home on the Internet at http:// greenfleet.dodlive.mil/currents-magazine.



Spotlight on the Ocean Futures Society

and are funding pilot programs to explore ocean thermal energy conversion as an energy source where feasible.

COUSTEAU: I'm very, very excited to hear about these initiatives. If the U.S. Navy cannot be the leaders in this field, I don't know who can. Our job is to share that information and make people believe that we're going to make it happen. It's not the end of the world unless we do nothing. Any information you can help us with, I guarantee you will be shared.

CURRENTS: You talked a lot about public awareness about the ocean, and that you need to understand something in order to protect it. How else does public perception of environmental issues affect your efforts? How else can you change those perceptions?

When you talk about the environment, maybe 30 or 40 percent of the people listen. When you talk money, you've got everyone's attention.

COUSTEAU: Well, one of the things we're doing is producing a series of books on the U.S. National Marine Sanctuary system. We did a two-hour television special on the sanctuary system. Here is what triggered the whole initiative. We asked people in the streets a series of questions about the sanctuary system—How many marine sanctuaries are there? Who is paying for them? How are they managed?—that sort of thing. The answers we got were shocking. No one knew anything.

One day we were in Georgia, preparing for a dive in a sanctuary, offloading our tanks, cameras of other equipment from our truck when a guy stopped and asked us what we were doing. I said, "We're doing a show about the marine sanctuaries." He said, "I didn't know the Marines had a sanctuary."

It's funny but also sad and shocking because this country has done an amazing job of protecting its critical coastal waters. That's when I realized that we needed to find ways to get books about the sanctuary system into every school in the United States.

In terms of changing people's perceptions, we need to focus more on economic values. I'll use a simple example. When I go grocery shopping with a reusable bag here in California, I get five cents every time I bring one bag. If I bring two bags, I get ten cents. I've saved money and helped the environment at the same time. I've helped to keep a plastic bag out of the mouth of a sea turtle who thinks it's a jellyfish. When you talk about the environment, maybe 30 or 40 percent of the people listen. When you talk money, you've got everyone's attention. So I've found myself talking more and more about money.



CURRENTS: Is there anything else you'd like our readers to know?

COUSTEAU: Well, I really would like *Currents* to reach more people. I think there's a lot of information that you have that the public would love to access. I have to say that, unlike other parts of the military services, people love the Navy.

CURRENTS: We are certainly trying to expand our reach. That's one of the reasons for these interviews with you and other influential leaders in the environmental community. We appreciate you taking the time to talk to us and share your perspective.

COUSTEAU: I wish you well and thank you for what you're doing. \checkmark

Sailor Finds Message in a Bottle During **Beach Cleanup**

From Japan to Kauai in Five Years

AN UNEXPECTED TREASURE

was found underneath the sizzling sun on the beaches of the Pacific Missile Range Facility (PMRF) on 15 September 2011. The treasure was discovered by Petty Officer Jon Moore during PMRF's participation in the

Ocean Conservancy's International Coastal Cleanup Day.

What Moore found was a literal message-in-a-bottle among a collection of ocean debris picked up on a one mile stretch of the base's coastline. The bottle contained a message from Saki

Arikawa—a sixth grader at the time in Japan—who launched the bottle in 2006 with a letter, four origami flowers and a photo of her class.

More than 40 personnel from PMRF teamed up with 16 students and faculty from Ke Kula Ni'ihau O Kekaha





ABOVE: Electrician's Mate 2nd Class Jon Moore removes a message from a bottle sent from Kagoshima, Japan more than five years ago.

RIGHT: Saki Arikawa's message in bottle found by Petty Officer Jon Moore.

MC1 Jay Pugh





The photo of Saki Arikawa and her sixth grade class was also found in the bottle discovered by Petty Officer Jon Moore.

School in observance of International Coastal Cleanup (ICC) Day. Over the past 25 years, nearly nine million ICC volunteers from 152 countries have picked up more than 144 million pounds of harmful trash from the ocean and waterways. During this signature event each September, hundreds of thousands of volunteers from countries all over the world spend a day picking up everything from cigarette butts and food wrappers to lost fishing nets and

It's All About the Relationships: Success in Hawaii a Direct Result of Partnerships

LOOKING INTO THE success of the recent ICC event, and others like it at PMRF, it's no wonder that Navy Region Hawaii Environmental Counsel Becky Hommon has a briefing slide titled "It's All About the Relationships."

That's how these events begin, how they continue, and how they breed more success in an ever-growing social network of cooperative conservation between the Navy, government, volunteers and community organizations.

Navy Region Hawaii, headquartered on the island of Oahu, and PMRF on the island of Kauai, can attribute their environmental success to the long and healthy relationships built from constant contact and mutual goals with agencies and people throughout the state of Hawaii.

The ICC beach walk is in its third year at PMRF, thanks to a solid partnership built by John Burger, Range Sustainment Environmental Coordinator at PMRF, and Chris Woolaway, Hawaii State ICC Coordinator. "That collaboration began in 2005 when Chris advised me of an Ocean Conservancy/U.S. Environmental Protection Agency study underway," Burger said. "It was called the National Marine Debris Monitoring Program. Chris was wondering if PMRF might participate." Burger garnered a core of 10–12 loyal participants to go out at lunchtime on Friday every 28 days for 26 months to collect and catalogue marine debris over two 500-meter, Global Positioning System-located stretches of PMRF. From that initial experience, John and Chris have collaborated on a number of efforts, including exploring a "Keep Kauai Beautiful" campaign aligned with "Keep America Beautiful" and "Keep Hawaii Beautiful" programs, followed by "World Oceans Day" in June and the most recent "ICC/Get the Drift and Bag It" beach cleanup.

Reporting back to Chris and the ICC, Burger was able to claim 421 pounds of debris collected, including a large tire, and of course, the message-in-a-bottle.

The fact that the bottle came from Japan caught the interest of others that Burger has partnered with, as ocean debris specialists from the University of Hawaii anticipate the eventual appearance of tsunami relics on Hawaii's shores.

Dr. Nikolai Maximenko of the International Pacific Research Center School of Ocean and Earth Science and Technology, University of Hawaii at Manoa, was already sharing data with Burger before the beach cleanup. In fact, Maximenko visited PMRF months earlier to collect information on some unusual debris that had shown up on base, just to make sure it was not an extremely early arrival from the Japan earthquake and tsunami. It turned out it was not from that event, however there was one interesting item that turned up a Russian worker's hard hat with Cyrillic writing on the brim. Burger willingly surrendered the item to Maximenko, since he is originally from Russia and is an expert at studying debris. It seemed "most appropriate for him to have this particular item," Burger said.

Burger is also the energy behind numerous cultural exchanges and learning opportunities with Ke Kula Niihau O Kekaha, a Hawaiian language charter school just a few miles down the road from PMRF. Literally translated as "The Niihau School of Kekaha," the school perpetuates the Niihau island dialect for students of Niihau heritage living in and around the town of Kekaha.

Past partnership projects with this school include the Mana Gardens Biomes, featuring four environmental regions in miniature form surrounding the visitor center at PMRF's main gate. Each biome contains Native Hawaiian plants from distinct regions. During development of the project, students from Ke Kula Niihau were responsible for learning the names and practical uses of each plant, and conducted a guided tour of the biomes on opening day, explaining the value of the plants to dignitaries in attendance.

These students joined Sailors and other PMRF volunteers for the beach walk, and saw first-hand the excitement of Petty Officer Jon Moore opening the message-in-a-bottle. In addition to Moore building a relationship between his family and the school in Japan, Ke Kula Niihau also initiated a sister school exchange based on this experience.

Haunani Seward, principal of Ke Kula Niihau O Kekaha, is one of the few who can match energy levels with Burger, and recognized the opportunity for broadening the horizons of her students by engaging their counterparts in Japan. The principal of the school in Kagoshima is in contact with Seward. And so the relationships continue to build.



The message is more than just a letter to Moore. When he found it, it reminded him of home.

major appliances. But on this day Moore found a bottle that wasn't just your average rubbish.

The bottle was sent from Arikawa from Kagoshima, Japan and traveled more than 4,000 miles and five years before it was discovered on the west side of Kauai.

"I looked over and saw the bottle. I jokingly thought it would have a treasure map inside, but it actually had a message," said Moore.

When Moore found the bottle, all the volunteers wanted to know what was inside.

"When I started reading the letter, the Kanji looked familiar since I used to live in Japan and the name of the student sounded like an average Japanese name to me. I was just glad the letter was also in English," stated Moore.

The letter, dated 25 March 2006, was sent as an elementary school graduation memory for Arikawa with the intent that the recipient would write a letter back.

"I'll definitely respond. I want to write back to the school and get their thoughts," said Moore.

The message is more than just a letter to Moore. When he found it, it reminded him of home. Though originally from Guyana, South America, he considers Japan home since his wife and son reside there. He's excited to tell them about what he found and plans to visit Kagoshima on his next trip home to visit his family. \$\mathcal{L}\$

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Going Green While Going Strong

DoD's Ambitious Sustainability Plan

DID YOU KNOW that the Department of Defense (DoD) has a ten-year plan for going green? Sweeping and ambitious, DoD's Strategic Sustainability Performance Plan (SSPP) aims to transform the way the Department uses and manages critical resources to create a clean, lean, efficient enterprise. It's all about the mission. DoD can do its job better if it uses resources more efficiently, reduces its dependence on finite resources like

systems that support it. More broadly, sustainability means creating and maintaining conditions under which humans and nature can exist in productive harmony, ensuring that the social, economic, and other requirements of future generations are met.

The SSPP is a result of Executive Order (EO) 13514 issued in October 2009, which provided for an exemption of military equipment and combat support operations. The plan objectives that will make the Department more effective:

- 1. Ensuring the Continued Availability of Resources Critical to the DoD Mission
- 2. Maintaining Readiness in the Face of Climate Change
- 3. Ensuring the Ongoing Performance of DoD Assets by Minimizing Waste and Pollution

Sustainability means creating and maintaining conditions under which humans and nature can exist in productive harmony.

fossil fuels and fresh water, and minimizes the environmental impacts of its activities.

Going green translates into the Department achieving sustainability by operating sustainably. DoD's SSPP charts the course for the Department to achieve a significantly more sustainable military force by 2020. The Department's vision of sustainability is to maintain the ability to operate into the future without decline—either in the mission or in the natural and manufactured

fills an important strategic need because sustainability and the DoD mission are inexorably linked. In the theatre of war, sustainability is a nobrainer, given the heavy burden on deployed forces to transport fuel and water to expeditionary camps. Sustainability matters to the war effort and the warfighter. DoD's fixed installations and other facilities support the war effort and warfighter, therefore sustainability matters to DoD's nonoperational facilities. The SSPP is framed around four mission-oriented

4. Continuously Improving the DoD Mission through Sustainability Management and Practices

The SSPP also serves a logistical function that has become increasingly critical as the volume of federal agency requirements pertaining to sustainability have proliferated in recent years, in the form of laws, Executive Orders and other regulations. The SSPP brings these requirements from which military operations and systems are exempt for security reasons-together under one overar-

ching, Department-wide plan that makes the Department's compliance more efficient and strategic.

Ensuring the Continued Availability of Resources Critical to the DoD Mission

Going green makes good sense for DoD installations and facilities because you cannot project power globally if the home base is starved for electricity or water. DoD has over 500 major installations that rely on the commercial electricity grid, placing the continuity of critical missions at risk due to power failures. Grid disruptions routinely occur during extreme weather events, and can also occur because of attacks to the system or simple overload of the grid on hot summer afternoons. Using energy more efficiently and ramping up the amount of renewable energy generated at DoD facilities decreases our reliance on fossil fuels. At the same time, these actions reduce emissions of the greenhouse gas (GHG) emissions that cause global climate change, while enabling DoD to better do its job.

This concept isn't new to DoD. Over the years, the Department has been installing solar panels and wind turbines on DoD properties, and investing in efficiency improvements such as electricity meters, high efficiency heating, ventilation and cooling systems, automated energy management control systems, improved lighting, and reflective roofs. However, the Department also knows it needs to do a lot

more to take advantage of the fossil fuel and money saving opportunities offered by energy efficiency and renewable energy. DoD's approach to doing so is embodied in six SSPP subgoals for fiscal year (FY) 2020 to reduce the use of fossil fuels:

- Reduce energy intensity (use per square foot of facility space) by 37.5 percent compared to FY 2003
- Increase the amount of facility electricity use that comes from renewable sources to 20 percent

- 3. Reduce the use of petroleum products by DoD non-tactical vehicles by 30 percent from FY 2005
- 4. Have ten landfills or wastewater treatment facilities recovering biogas for DoD use
- 5. Reduce GHG emissions from employee air travel seven percent from FY 2011 levels

Secretary Mabus on Why Energy Matters to the Navy

"BY 2020 AT the latest, at least half of our energy, afloat and ashore, will come from non-fossil fuel sources. Another goal is that no later than 2020, at least half our bases will be at net zero in terms of the energy that they use. Ensuring that our new buildings are energy-efficient and ensuring that they use the latest technologies is an important part of meeting this goal. It's important to set a framework for why we established these goals: it's all about our energy security and moving toward complete energy independence. Our military and our country rely too much on fossil fuel. That dependency degrades our national security; it also harms the environment and has a negative effect on our economy."

-Secretary Ray Mabus, 10 May 2011



Capt. Mark McLaughlin, commanding officer of Naval Air Station (NAS) Kingsville, and Cmdr. Troy Hamilton examining the base's advanced electricity meter.



 Increase the number of eligible employees teleworking at least once a week, on a regular, recurring basis, to 30 percent

Water plays a dominant role in the SSPP. It just makes good sense to squeeze the most out of every gallon of water that utilities deliver to DoD facilities. This means plugging leaks in aging pipes on installations as well as conserving water and using it more efficiently. Some installations, especially those in parts of the country where water is scarce, are leading the charge with measures like installing water-efficient showerheads and faucet aerators, reclaiming water for irrigation, using landscaping that requires little or no irrigation, and proactively managing leaks. Reducing the use (and waste) of water yields a cascade of benefits, saving not only water and money, but the energy required to treat and pump the water, which in turn reduces the GHGs that go along with that energy.

Another facet of water management is minimizing the amount of stormwater flowing off of DoD properties when it rains, or during a snow melt.

Stormwater runoff carries pollutants into water bodies, which can cause compliance problems for DoD, and it makes the wastewater treatment system work harder (which then also uses more energy). The SSPP has three sub-goals to manage water resources better:

- Reduce the potable water used per square foot of facility space 26 percent by FY 2020 from FY 2007
- Reduce industrial and irrigation water consumption 20 percent by FY 2020 from FY 2010
- 3. When developing or redeveloping a site, do not increase the amount of stormwater flowing off of it, to the maximum extent technically feasible

Maintaining Readiness in the Face of Climate Change

The 2010 Quadrennial Defense Review discusses the importance of climate change to the future security environment, saying "DoD will need to adjust to the impacts of climate change on

our facilities and military capabilities." For fixed installations, sea level rise can damage or destroy infrastructure, reduce the availability of land for training, and contaminate groundwater due to seawater intrusion. Heat waves may become more intense, frequent and longer; flooding and hurricane intensity might increase; and water supply could become more limited. All of these consequences can impede DoD's mission. In the near future, the Department will be addressing ways of increasing DoD's resiliency to climate change. Meanwhile, the SSPP addresses climate change through the reduction of GHG emissions, committing to two ambitious goals for FY 2020:

- Reduce GHG emissions from Scope 1 and 2 sources by 34 percent from FY 2008 levels
- Reduce GHG emissions from Scope 3 sources by 13.5 percent from FY 2008 levels

Scopes 1, 2 and 3 are different categories of emissions. DoD has direct

control over Scopes 1 and 2 emissions, while Scope 3 GHGs occur as a result of DoD activities, but the Department does not have direct control over them. Examples of Scopes 1 and 2 are the use of fuel in its vehicles and the use of electricity purchased from a utility, respectively. Examples of Scope 3 emissions are employee commuting and goods and services provided by vendors.

Ensuring the Ongoing Performance of DoD Assets by Minimizing Waste & Pollution

Chemicals, benign and otherwise, are essential to DoD operations. It is in the Department's interests to minimize its use of hazardous and toxic chemicals and materials for a multitude of reasons—they can result in compliance and cleanup costs, harm human

health, and increase the lifecycle costs of weapon systems and facilities. The Department has been steadily finding ways to switch to safer and greener chemicals. For example, last year the Navy's Fleet Readiness Center Southeast in Jacksonville, FL decreased its annual use of toluene by 95 percent (700 gallons) by replacing it with an environmentally friendly aviation solvent. Moving forward, the Depart-

Sustainability Actions in FY 2010: Examples at the DON Level

■ Energy Efficiency

The Department of the Navy (DON) is out in front on metering. It is rapidly installing advanced meters in most of its buildings, with the goal of covering approximately 95 percent of consumption of building electricity, natural gas, water and steam by the end of FY 2016. DON will have 17,000 advanced meters installed by the end of FY 2011, and more than 25,000 by FY 2016. Advanced metering does not just measure consumption, it transmits data in real time from all of the meters to a central workstation, giving facility managers the data needed to optimize efficiency.

■ Renewable Energy

DON is completing a high-level review of the cost and benefits of solar, wind and biomass energy at all installations, and following up with on-site audits. In FY 2010, the Navy installed 10 solar photovoltaic projects, and wind turbines at Naval Base Guam. It already has 25 projects planned for the near future (FY 2011–FY 2012), spanning solar, wind, and ground source heat pumps.

Buildings

On behalf of DON, the Naval Facilities Engineering Command (NAVFAC) issued policy and guidance in December 2010 requiring that all new buildings and major renovations costing over \$750,000, and all repairs and alterations to existing buildings, comply with the federal High Performance and Sustainable Buildings Guidance.

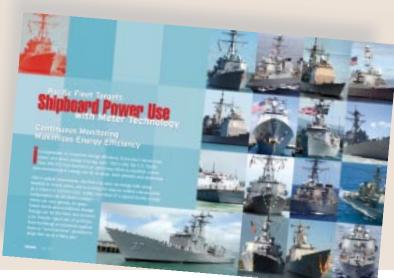
Stormwater Run-Off

DON developed and implemented a capability to electronically track compliance with its stormwater runoff and low-impact development requirements, using the NAVFAC project management tool called "eProjects."

Paper Reduction

DON already issued policy to help reduce the use of printing paper, and—in support of the DON policy—the Space and Naval Warfare Systems Command issued policy and guidance on duplex printing requiring all of its locations to use Energy Star duplication devices (such as printers, photocopiers, fax machines, and multifunction printers) with duplex printing capability to the maximum extent possible, and for users to print double-sided.

For more insights into the Navy's efforts to acquire and communicate electrical use data from existing power meters in port and at sea, read our article entitled "Pacific Fleet Targets Shipboard Power Use with Meter Technology: Continuous Monitoring Maximizes Energy Efficiency" in the fall 2011 issue of *Currents*. To browse back issues or subscribe to the magazine, visit the Department of the Navy's Energy, Environment and Climate Change web site—at greenfleet.dodlive.mil/currents-magazine.





Xeriscape landscaping at the Navy Exchange Mall and Commissary in Pearl Harbor, where fresh water is scarce.

Thomas Obungen

ment set four sub-goals for this decade to minimize the use and release of chemicals of environmental concern:

- Reduce toxic chemicals (on-site releases and off-site transfers) 15 percent by FY 2020, from CY 2006 levels
- 2. Dispose of all excess or surplus electronic products in an environmentally sound manner
- Divert half of the non-hazardous solid waste (not counting construction and demolition debris) from the waste stream by FY 2015 through reuse, recycling, and composting
- 3. Divert 60 percent of construction and demolition debris from the waste stream by FY 2015

Going green makes good sense for DoD installations and facilities because you cannot project power globally if the home base is starved for electricity or water.

- 3. Properly certify all DoD personnel and contractors who apply pesticides
- 4. Have all installation integrated pest management plans prepared, reviewed, and updated annually by pest management professionals

The Department has long been proactively diverting solid waste from landfills and incinerators through recycling. In addition to the solid waste diversion sub-goals shown below, DoD is now also tackling our over-reliance on printed documents:

 $\begin{tabular}{ll} 1. & All 31 DoD Components implementing policies to reduce the use of printing paper by FY 2014 \\ \end{tabular}$

Continuously Improving the DoD Mission through Sustainability Management & Practices

Some of the things that can be done to make DoD more green don't fit nicely in a single sector, such as energy or chemicals. They cut across sectors and address the way DoD conducts its day-to-day business. For example, making buildings sustainable requires an integrated approach spanning many sectors, including energy, water, indoor air quality, and stormwater runoff. To address these cross cutting topics, the SSPP has four sub-goals under the objective to continuously improve the mission through sustainability management and practices:

What Can One Person Do?

■ Go (Almost) Paperless

Re-think and reorganize the way you work to rely on electronic documents rather than printed ones. Set your duplication devices to double-sided printing for those times when you do print or copy.

Work from Home Sometimes

If you can do at least part of your job at home, arrange to telework one or more days a week.

■ Use Energy and Water Responsibly

Go to the "Power Options" in your computer's Control Panel to enable power saving features and extend the useful life of office electronics (DoD Policy); shut down your computer at night; turn off lights. Run the faucet sparingly, and report leaking faucets or toilets.

Recycle

Get in the habit of making full use of your facility's recycling program.

Properly Process Unwanted Electronics

Make sure your old computer equipment is processed through DLA Disposition Services (www.drms.dla.mil) or a similar program.

Green Your Travel

When you have to travel, maximize your use of walking and mass transit for local travel; go for clean cars such as hybrid electric vehicles if renting; and use non-stop flights if flying.

■ Make Green Procurement Decisions

Ninety-five percent of all contracts must have provisions for sustainable products. A few handy web sites to help:

- Look for the green tree icons in DoD EMALL (www.dlis.dla.mil/emall.asp).
- Make sure computers and other electronic equipment fulfill
 their relevant requirements such as Energy Star
 (www.energystar.gov) and the Department of Energy's Federal
 Energy Management Program (www1.eere.energy.gov/
 femp/technologies/eep_purchasingspecs.html).
- Follow the U.S. Environmental Protection Agency's guidelines on recycled content (www.epa.gov/epawaste/ conserve/tools/cpg/products/index.htm).
- See if products you're buying are listed in U.S. Department of Agriculture's BioPreferred Catalog of biobased products (www.catalog.biopreferred.gov).

- 1. Conduct 95 percent of procurement actions (new contracts and modifications) sustainably
- 2. Have 15 percent of existing buildings conforming to a set of federal sustainability criteria by FY 2015
- 3. Effectively implement and maintain all Environmental Management Systems
- 4. Coordinate with planning relating to regional and local transportation and energy choices

What's Next?

The DoD SSPP applies to everyone in the Department, spanning all 31 DoD Components: the Military Services, the Defense Logistics Agency (DLA) and 17 other Defense Agencies, and the ten DoD Field Activities. The plan was developed through an iterative, participatory process with DoD subject matter experts, the DoD Components, and existing committees and work groups. The DoD Sustainability Implementation Working Group is charged with integrating all of these initiatives in a coordinated, cohesive strategic plan—the SSPP. It is updated annually with input and participation by these stakeholders. The SSPP is an ambitious undertaking, and translating this DoD-wide roadmap for sustainability into a green DoD by 2020 will take action and innovation on the ground. In DoD installations, depots and office buildings around the world, military and civilian, making the vision of DoD's sustainability plan a reality is everyone's business. Although exempt from EO 13514, DoD is not keeping operations exempt from its sustainability efforts—the Components are making important strides integrating sustainability concepts and initiatives into operational environment.

The SSPPs and related guidance can be found on the Defense Environmental Network and Information Exchange (DENIX) at http://www.denix.osd.mil/ sustainability/PlansGuidance.cfm. &

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Developments of Interest— August through October 2011

THIS ARTICLE HIGHLIGHTS significant environmental regulatory changes and indicators suggesting future changes to the regulatory landscape.

This quarter saw the release of several guidance documents relating to sustainability, environmental justice, and energy, including "Implementing Instructions on Sustainable Locations for Federal Facilities," "National Strategy for Electronics Stewardship," Memorandum of Understanding on Environmental Justice, and a Presidential Memorandum addressing energy efficiency and alternative energy that encouraged energy performance savings contracting, utility energy service contracts, and power purchase agreements.

- Promote accessibility to affordable housing.
- Maximize use of existing infrastructure; reuse existing sites including brownfield/greyfield development, infill development, and preservation of historic resources and other existing buildings.
- Avoid development of agricultural and other undeveloped lands.
- Preserve existing ecosystems and environmental resources—specifically including implementing the Energy Independence and Security Act 438 stormwater runoff requirements.
- Promote climate change adaptation planning.
- Maximize use of existing Federal space, by consolidation, co-location, disposing of unneeded facilities, and

This quarter saw the release of a Presidential Memorandum addressing energy efficiency and alternative energy that encouraged energy performance savings contracting, utility energy service contracts, and power purchase agreements.

The Implementing Instructions on Sustainable Locations for Federal Facilities, issued by the Council on Environmental Quality to provide for compliance with Executive Order (EO) 13514, provides a set of Principles for Sustainable Federal Locations. Each Federal agency's June 2012 Strategic Sustainability Performance Plan submission shall provide evidence that the agency has integrated the Principles into written agency procedures for defining their facility requirements, formulating funding requests, and into the agency's site selection and lease procurement procedures. The principles include:

- Participate in advancing local and regional planning goals—engage and consult with local officials; align Federal actions with local and regional plans.
- Seek Location-Efficient Sites; consider co-location and mixed-use siting of Federal facilities in central business districts or town centers.
- Give consideration to sites that are pedestrian friendly, are near existing employment centers, and accessible to public transit; are walkable, and bikeable.

- by careful review of space utilization rates and needs in light of technological advances and new ways of doing business.
- Review standard security design requirements to reduce unnecessary costs.
- Reduce parking demand for single occupancy vehicles.

Regulatory and environmental news items of interest (January 2011 through April 2011) include the following:

Easy Access

FOR EASY AND direct access to the web addresses included in this regulatory summary, select the "Digital Currents" link next to the "Regulatory Corner" link on the *Currents* page on the Department of the Navy's Energy, Environment and Climate Change web site—at http://greenfleet.dodlive.mil/currents-magazine.

regulatory corner

Air

Mandatory Reporting of Greenhouse Gases— Minor Corrections: Proposed Rulemaking (2011-08-04) http://www.gpo.gov/fdsys/pkg/FR-2011-08-04/html/ 2011-18712.htm

Mandatory Reporting of Greenhouse Gases (U.S. Environmental Protection Agency (EPA)): Change to the Reporting Date for Certain Data—Final Rule (2011-08-25)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-25/html/ 2011-21727.htm

Addition of 26 Non-Ozone Depleting Substance Compounds for Significant New Alternatives Policy Program—Notice (2011-10-04)

http://www.gpo.gov/fdsys/pkg/FR-2011-10-04/html/ 2011-25391.htm

Secondary National Ambient Air Quality Standards for Oxides of Nitrogen & Sulfur (addition of secondary standards identical to primary)—Proposed Rulemaking (2011-08-01)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-01/html/ 2011-18582.htm

President to Postpone Tightening of Ozone National Ambient Air Quality Standards (NAAQS)—Notice (2011-09-02)

http://www.whitehouse.gov/the-press-office/2011/09/02/statement-president-ozone-national-ambient-air-quality-standards

In response to the 2 September 2011 statement by the President on the Ozone NAAQS, EPA clarifies to states and local regulatory agencies the status of the Ozone NAAQS and outlines implementation steps of the 2008 Ozone NAAQS—EPA's Memo (2011-09-22)

http://www.epa.gov/groundlevelozone/pdfs/ OzoneMemo9-22-11.pdf

Climate Change, Alternative Fuels

Energy Standards for New Federal Buildings—Final Rule (2011-08-10)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-10/html/ 2011-20024.htm

Department of Energy Adopting Full-Fuel-Cycle Analyses Into Energy Conservation Standards Program—Notice (2011-08-18)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-18/html/ 2011-21078 htm

Faucets, Showerheads, Water Closets and Urinals Efficiency—Notice and Request for Comments (2011-08-23)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-23/html/ 2011-21494.htm

Commercial Building Workforce Job/Task Analyses— Notice (2011-10-14)

http://www.gpo.gov/fdsys/pkg/FR-2011-10-14/html/ 2011-26645.htm

Energy Conservation Standards for Residential Refrigerators and Freezers—Final Rule (2011-09-15) http://www.gpo.gov/fdsys/pkg/FR-2011-09-15/html/

Energy and Sustainability Efficiency and Clean Energy Technology—Executive Order, Implementation (2011-08-16)

http://www1.eere.energy.gov/femp/pdfs/ceq_espc_memo082011.pdf

Water, Drinking Water

2011-22329.htm

California Adopts Non-Regulatory Public Health Goal For Hexavalent Chromium in Drinking Water—Notice (2011-07-27)

http://www.oehha.ca.gov/public_info/press/Chrom6_072911.html

National Environmental Planning Act & Planning, Natural Resources

Submarine Cable Projects in National Marine Sanctuaries—Notice (2011-09-15)

http://www.gpo.gov/fdsys/pkg/FR-2011-09-15/html/ 2011-23625.htm

Presidential Memorandum of Understanding on Environmental Justice and EO 12898—Presidential Memo or Proclamation (2011-08-04)

http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceeac 8525735900400c27/28420a5ae8467cf5852578e200635712! OpenDocument

Occupational Safety & Health

National Institute for Occupational Safety and Health Antineoplastic List and Other Hazardous Drugs in Healthcare Settings 2012—Notice and Request for Comments (2011-08-02)



http://www.gpo.gov/fdsys/pkg/FR-2011-08-02/html/ 2011-19460.htm

Occupational Injury and Illness Recording and Reporting Requirements—Proposed Rulemaking, Reopening (2011-09-28)

http://www.gpo.gov/fdsys/pkg/FR-2011-09-28/html/ 2011-24779.htm

Recommendations on the Annual Radiological Dose Limit to the Lens of the Eye—Notice and Request for Comments (2011-08-30)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-30/html/ 2011-21900.htm Green Products Compilation Version 9 Released—Notice (2011-08-23)

http://www.fedcenter.gov/Documents/index.cfm?id = 19300&pge_id = 1854

Toxics

Lead Clearance and Clearance Testing Requirements— Final Rule (2011-08-05)

http://www.gpo.gov/fdsys/pkg/FR-2011-08-05/html/ 2011-19417.htm

100 parts per million Lead Content Limit in Children's Products—Notice (2011-07-26)

http://www.gpo.gov/fdsys/pkg/FR-2011-07-26/html/ 2011-18510.htm

To subscribe to the Naval Facilities Engineering Service Center's free Weekly Federal Regulatory Summary, contact NFESCRegulatorySupportDesk@navy.mil or 805-982-2640.

Other

Sustainable Locations for Federal Facilities—Notice, Guidance (2011-09-15)

http://www.fedcenter.gov/Documents/index.cfm?id = 19447&pge_id = 1854

Exposure Factors Handbook—Notice (2011-10-03) http://www.gpo.gov/fdsys/pkg/FR-2011-10-03/html/2011-25412.htm

Procurement

Improving Sustainable Acquisition and Reporting—Presidential Memo or Proclamation (2011-10-05)

 $http://www.whitehouse.gov/sites/default/files/omb/assets/\\procurement_green/improving-sustainable-acquisition-and-reporting.pdf$

Additional Biobased Items Designated for Federal Procurement—Final Rule (2011-07-22)

http://www.gpo.gov/fdsys/pkg/FR-2011-07-22/html/ 2011-18478.htm

Designation of Additional Biobased Procurement Product Categories—Proposed Rulemaking (2011-09-14)

http://www.gpo.gov/fdsys/pkg/FR-2011-09-14/html/ 2011-23067.htm

Waste & Recycling

National Strategy for Electronics Stewardship—Notice (2011-07-20)

http://yosemite.epa.gov/opa/admpress.nsf/1e5ab1124055f3b2 8525781f0042ed40/030075aab3c88984852578d300566b3b! OpenDocument

Definition of Solid Waste—Proposed Rulemaking (2011-07-22)

http://www.gpo.gov/fdsys/pkg/FR-2011-07-22/html/ 2011-17031.htm

The Naval Facilities Engineering Service Center provides a free Weekly Federal Regulatory Summary that Department of Defense (DoD) personnel or contractors supporting DoD may receive by e-mail. To subscribe or unsubscribe, contact NFESCRegulatorySupportDesk@navy.mil or 805-982-2640.

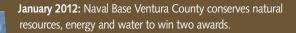
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everal of the winners of Secretary of the Navy (SECNAV) Energy and Water awards and Environmental awards take the *Currents* calendar stage for 2012. In fact, with so many winners, we even are expanding the calendar to an 18-month format, keeping you covered through June 2013. Each month also includes a quote that is related to the topic or the installation.

Here are a few of the items you can expect to see:



April 2012: Marine Corps Air Ground Combat Center Twentynine Palms garners three SECNAV awards—two environmental and one energy.

July 2012: Naval Station Great Lakes shows off its sustainability.

October 2012: For Energy Awareness month, learn how Naval Support Activity Souda Bay Greece captured an energy award.

January 2013: For the energy award in the large ship category, it is USS BATAAN (LHD 5) taking the prize.

April 2013: The submariners at Naval Submarine Base King Bay scoop up two, with an environmental quality award and an energy platinum award.

As the Navy's official energy and environmental magazine, *Currents* has the privilege to share the many ways the Navy's energy and environmental personnel and Sailors work to find and implement the best techniques to achieve their goals. *Currents* provides a forum in which all of you can share your knowledge and successes with your colleagues.

Do you subscribe to *Currents*? If so, you should have received your 2012 calendar by now. If not, please contact Lorraine Wass, our distribution manager, at ljwass@surfbest.net or 207-384-5249 to receive your own copy of the calendar, request additional copies and sign up for *Currents*.

Don't forget to check us out online at http://greenfleet.dodlive.mil/currents-magazine.



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flickr.com/photos/navycurrents

Thanks for all of your great work and we look forward to seeing more from you in the pages of *Currents*!

EPCRA Updates & Lessons Learned

2010 Lessons Learned & New Toxic Chemicals

Form R Data Hard at Work

Defense Environmental Programs Annual Report to Congress

The information provided on your Form R(s) is the basis of all data, calculations, and analysis for the Defense Environmental Programs Annual Report to Congress (DEP ARC). The fiscal year (FY) 2010 DEP ARC provides a comprehensive review of the Department of Defense's (DoD) budget trends and

the Navy Toxics Release Inventory (TRI) total releases on- and off-site, top 10 toxic chemicals released, top 10 installations (highest release amounts), and the top 10 percent change for toxic chemical releases and installation total releases. The summary analysis provided in the DEP ARC identifies toxic chemical release trends across the services allowing for comparisons, trend analysis, and identification of release reduction successes.

toxic chemical releases and tracks progress made during the previous year as well as plans for the current year and beyond. Form R release data collected in support of EPCRA Section 313 compliance is used to assess Navy's success in meeting the toxic chemical release reduction goal identified in the SSPP and new opportunities for reduction.

However, the Form R data and information currently collected only tells

The FY 2010 DEP ARC is available for review and download on the DENIX web site.

environmental performance. This publically available report summarizes the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313 reported toxic chemical data for DoD as a whole, each service, and the Defense Logistics Agenc (DLA). It also examines progress made in meeting toxic chemical release reduction goals.

The DEP ARC presents Form R data for the current reporting year (RY) and the previous four years. It details

The FY 2010 DEP ARC is available for review and download at the DoD Environmental, Safety, and Occupational Health Network and Information Exchange (DENIX) web site at www.denix.osd.mil/arc/Index.cfm.

DoD Strategic Sustainability Performance Plan

Form R data is used to track progress towards the DoD Strategic Sustainability Performance Plan (SSPP) reduction goals. The SSPP identifies goals established by DoD to reduce

part of the story. The "EPCRA: Knowing is Half the Battle" article in the summer 2011 issue of *Currents* discusses updates to the Navy's environmental policy manual, due for release this year, and the subsequent policy and requirement changes for implementing EPCRA. In preparation for the new policy requirements, installations were asked to provide, along with their reports submitted in 2011, detailed information on the processes and activities that contribute to their toxic chem-

ical thresholds and emissions, events driving emission changes, progress and accomplishment supporting SSPP reduction goals, and reason(s) for non-reporting.

The FY 2010 SSPP is available for review and download at the DENIX web site at http://www.denix.osd.mil/sustainability/PlansGuidance.cfm.

2. Non-reporting explanation

Is the explanation for non-reporting clear and concise? For example, was the threshold not reached? If so, why? Was an exemption (or exemptions) applied to major activities resulting in no reporting required?

If you have EPCRA related questions or need further clarification on what information to provide, please email the Navy EPCRA Helpline at NavyEPCRA@urs.com.

RY 2010 Lessons Learned

New data collected during the past reporting period provided additional insights to EPCRA-related processes and activities occurring Navy-wide. For RY 2010 efforts, many installations provided thorough responses regarding the processes and activities contributing to their toxic chemical thresholds and release, events driving release changes, progress and accomplishments supporting SSPP reduction goals, and reason(s) for nonreporting. The information you provide helps to identify pollution prevention opportunities, direct research and development efforts, and characterize progress made towards the SSPP reduction goal, so a complete response is crucial. To meet EPCRA reporting deadlines, now is the time to start collecting the information and data pertaining to the EPCRA TRI and SSPP. To assist with data collection and submission, ensure you follow the four guidelines below.

1. Processes triggering Form R reporting

Have I provided detailed information on processes triggering Form R reporting at my facility? A detailed response is especially important as no two facilities operate the same processes in the same way. The overall TRI process-driven data and information you provide serve as a starting point for headquarters personnel to analyze each installation's input processes and provides an opportunity to evaluate how the Navy will implement major projects to increase efficiency, comply with regulations, and minimize TRI releases.

3. Explanation for a release increase/decrease

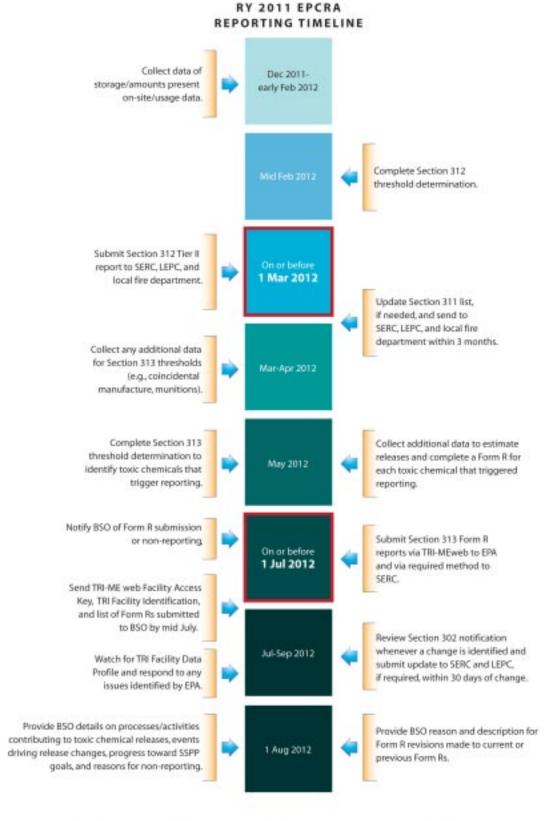
Did my TRI data analysis identify significant increases/decreases from the previous RY? If so, have I provide an explanation for the significant increases/decreases from the previous RY? For example, was the increase/decrease related to demilitarization, remediation, construction or demolition, weather, joint basing, or other events? Was the increase/decrease related to a facility change, such as workload, new process line, new weapon system, etc.? Was a process, material, or specific toxic chemical eliminated through process modifications or material substitution?

4. SSPP reduction goal progress report

Provide inputs on meeting the SSPP reduction goal of reducing non-range reportable quantities of on-site releases and off-site transfers of toxic chemicals by

EPCRA Related Data Request

THE INFORMATION YOU provide helps Navy to accurately assess toxic chemical releases, provides valuable insight into Navy Form R reporting, and helps to identify reduction opportunities through comparisons of toxic chemicals, processes, and activities between installations. For example, where two Navy installations are conducting the same processes but reporting different toxic chemicals or not reporting at all, a comparison could identify product substitutions, process modifications, or other opportunities to reduce toxic chemical releases and potentially eliminate the need to report.



*Compile and complete all EPCRA documentation for the reporting year as soon as practicable following submittals. Timeline reflects OPNAVINST.IC, Environmental Readiness Program Manual, to be released 2012.

15 percent by FY 2020 relative to RY 2006. A good example was provided by Fleet Readiness Center Southeast, where they decreased toluene use by 95 percent by switching to an environmentally-friendly aviation solvent, eliminating more than 700 gallons of toluene.

If you have EPCRA related questions or need further clarification on what information to provide, please email the Navy EPCRA Helpline at NavyEPCRA@urs.com or request assistance via the chain of command.

EPCRA News & Events

EPCRA Training Available Now

The Naval Civil Engineer Corps Officers School (CECOS) offers EPCRA and TRI Reporting refresher courses to prepare for RY 2011 deadlines of 1 March 2012 for Section 312 reporting and 1 July 2012 for Section 313 reporting. The Section 311/312 and Section 313 refresher courses briefly review the regulations with a focus on DoD and Navy-specific scenarios. Course participants may submit facility-specific questions in advance of the training for discussion. The refresher course for the Sections 311/312 requirements is offered on 12 January 2012 and the Section 313 refresher course is offered on 15 February 2012. All EPCRA course offerings are listed on the CECOS web site at https://www.netc.navy.mil/ centers/csfe/cecos/ under the courses tab

New Toxic Chemicals for Section 313 Reporting

The U.S. Environmental Protection Agency (EPA) added 16 chemicals to the list of toxic chemicals subject to reporting under Section 313 of

Sixteen New Toxic Chemicals for RY 2011 Reporting

THE CHEMICALS ADDED to the EPCRA Section 313 toxic chemical list include the following:

- 1. 1-amino-2,4-dibromoanthraquinone
- 2. 2,2-bis(bromomethyl)-1,3-propanediol
- 3. furan
- 4. glycidol
- 5. isoprene
- 6. methyleugenol

- 7. o-nitroanisole
- 8. nitromethane
- 9. phenolphthalein
- 10. tetrafluoroethylene
- 11. tetranitromethane
- 12.vinyl fluoride

In addition, the chemicals added to the PACs toxic chemical category include:

- 1. 1,6-dinitropyrene
- 2. 1,8-dinitropyrene

- 3. 6-nitrochrysene
- 4. 4-nitropyrene

EPCRA. The new chemicals are applicable for the RY beginning 1 January 2011 (reports due 1 July 2012). There are 12 individual toxic chemical listings and four chemicals added to the toxic chemical category for polycyclic aromatic compounds (PAC). The PACs category is a category of persistent, bioaccumulative, toxic chemicals and, as such, has a reporting threshold of 100 pounds.

EPA's Consolidated List of Chemicals Subject to EPCRA reporting (a.k.a. the List of Lists) reflects the additional 16 chemicals and is available on EPA's web site at http://www.epa.gov/emergencies/tools.htm#lol.

Navy Enterprise Resource Planning

The Navy Enterprise Resource Planning (ERP) system is an integrated business management system that updates and standardizes Navy business operations, provides financial transparency and total asset visibility across the enterprise, and increases effectiveness and efficiency. The first

release of the Navy ERP system, which includes financial management, acquisition program management, and workforce management, is currently in use at the Naval Air Systems Command, Naval Supply Systems Command (NAVSUP), Space and Naval Warfare Systems Command, and Naval Sea Systems Command General Fund. In addition, Navy ERP's Single Supply Solution rolled out to NAVSUP in March 2010. Over time, Navy ERP will replace the Regional Hazardous Inventory Control System and other systems used for hazardous materials management at Navy installations (industrial sites with hazardous materials managed by the DLA are not affected). 🕹

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MCLB Albany Officials Flip Switch for Landfill Gas-to-Energy Plant

First-Ever Facility Will Produce Renewable Electric Power & Steam

IN A LANDMARK ceremony on Friday, 23 September 2011, officials from Marine Corps Logistics Base (MCLB) Albany, GA and the local community flipped the switch on a \$20 million generator plant that will produce 1.9 megawatts of renewable electric power and steam by burning landfill gas collected from a nearby landfill.

switch to the generator allowed the base to begin producing 20 percent of its total energy requirement.

"This landfill gas-to-energy project will not only help us reduce our greenhouse gas emissions and our energy intensity, but increase our renewable energies and energy security," he said. "This project is just the begincarpooling program will also help us to meet energy mandates," he said. "Other projects include transitioning our fleet of vehicles to about 90 percent electric and 10 percent hybrid, photovoltaic solar panels on the 90 acres of warehouse rooftops, and a potential large-scale biomass project."

The process will recover methane gas from the neighboring landfill and convert it into energy and steam to help power Maintenance Center Albany.

Twenty-one months ago, MCLB Albany, Dougherty County, GA, and Chevron Energy Solutions officials inked the first landfill gas-to-energy partnership. The new green technology is the first of its kind within the Department of the Navy. The process will recover methane gas from the neighboring landfill and convert it into energy and steam to help power Maintenance Center Albany.

Col. Terry V. Williams, commanding officer, MCLB Albany, said flipping the

ning of a very aggressive energy conservation plan. We are very proud of our energy program."

Williams also noted other energy projects the base is involved in including a large scale geothermal project—another ground-breaking first—and a ground source heat pump and storage project.

"We are also involved in a waste-toenergy demonstration project that will look at taking scrap wood materials and creating bio-oil. Our Fred Broome, director, Installation and Environment (I&E) Division, MCLB Albany, said, "Friday was a very exciting day. I am extremely proud of the I&E team and their hard work over the past three years."

"Our I&E team worked tirelessly behind the scenes on this project," he continued. "This was a very complicated and complex contract and there are not many of them in the Department of Defense. This resulted from a 23-year relationship. Getting to this



Col. Terry V. Williams, left, commanding officer, MCLB Albany, is among several military and public officials that flipped the switch on the \$20 million generator plant during a ceremony held on 23 September 2011.

point was not easy, but it was well worth the effort."

Broome commented that the generator is currently making electricity, and next year Headquarters Marine Corps has agreed to fund a second generator, so it will double the capacity.

"There are several mandates to reduce energy consumption and there are multiple other projects in the works to accomplish that," Broome said. "Net zero is the ultimate goal. If we can get to the point where the amount of energy we are consuming is not greater than the amount of energy we are producing, then we will not be dependent on anyone. Ideally all of that energy is made from renewable resources such as biomass, energy from the sun, and so on."

Broome added that the projects are all about energy security.

"This electricity can be used anywhere on the base," he said. "It gives us a source of electricity in the event Georgia Power went down. We can still meet our critical demands here. So the maintenance center can keep doing most of its mission with just this one generator. We cannot only make energy from methane gas, but if for some reason that was interrupted, we can make it from natural gas—a triple redundancy."

Lt. Cmdr. Dan Stoddard, integrated product team leader/assistant operations officer, Naval Facilities Engineering Command Southeast, Jacksonville, FL, said the significance of the project, in addition to its technical features, is being able to generate 20 percent of the base's electrical needs.

"Reducing the need for the additional outside purchase of power is something that is unheard of. This is the first project of its kind for the Department of the Navy," he said. "The fact that the base could partially become independent from an outside electrical provider is amazing."

Jeff Sinyard, chairman, Dougherty County Commission, said one of the primary objectives for the county is to partner with the base, help it become more efficient, and position them to maintain its current mission, and grow other missions as well.

"We understand the need and what we do for the warfighter. But we also understand the business side of the base," he said. "With their current energy mandates and our country's desire to depend less on foreign oil and have more green, renewable energy, this was the right thing to do."

Sinyard said that since this is the first landfill gas-to-energy program in the country for the Navy, it means a lot to the local community. County officials take great pride in this project.

"The Marines and other partners have worked tirelessly for three years to make this happen," he said. "We are excited not only about what we are doing for the base, but for the region and this country as well."

Mike McCoy, assistant county administrator, Dougherty County, GA, was



the solid waste director and one of the people who had the idea to extract gas from the landfill.

"During my time as solid waste director, I was thinking of ways to

of hard work by some great engineers and construction managers.

"It is a true partnership between MCLB Albany, the Navy, Dougherty County and Chevron," he said. "This is done," he said. "I think it could be a model for other public-private partnerships that seek to help the armed services achieve their energy efficiency and renewable energy goals."

The significance of the project, in addition to its technical features, is being able to generate 20 percent of the base's electrical needs.

improve the landfill. One of those ways was to find a beneficial use for the landfill gas," he said. "This is very gratifying. It has not only benefitted the Marine Corps, but has helped the community and the landfill. It was a great partnership. The leaders of each organization are to be commended for coming together and making this happen."

John Mahoney, senior vice president, Chevron Energy Solutions, said Friday's ceremony was the culmination of a lot a great example of what can be accomplished when you bring people together and they are focused on saving energy, producing renewable energy, and helping the environment."

Mahoney said this has been a really important project for Chevron and, despite the challenges, he and his company are proud of the results.

"We have done many projects with the Department of Defense and the military, but this one is unique. It is the first landfill gas-to-energy project we have Mahoney said his company has been working with MCLB Albany for more than 10 years, saving them more than \$2 million. He expects that this project alone will save the base \$1.8 million annually.

Photos by Nathan Hanks

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There's an Owl in the Ballroom

NSA Monterey Environmental Staff Dance with Winged Intruder Until Its Capture

THE URGENT THURSDAY morning call wasn't for 'Bats in the Belfry' but for an 'Owl in the Ballroom.'

While preparing for a formal dinner at Naval Support Activity (NSA) Monterey, CA with 400 guests expected, workers setting up tables watched in astonishment as a barn owl flew through the open ballroom doors and proceeded to fly laps around the ceiling before roosting on top of one of the huge chandeliers.

NSA Monterey environmental staff responded to the call at the Del Monte Hotel. The historic 1920's Spanish



Mediterranean Revival style hotel remains the architectural focal point of NSA Monterey and the Naval Postgraduate School. The massive, formal ballroom with 30-foot ceilings is used for numerous functions including, on this day, bird watching.

Installation Natural Resources Specialist Vicki Taber arrived on site and received the word from on high that the owl would not be in the ballroom for the evening dinner event. Looking up at the owl perched on the ornate chandelier 30 feet above, Taber wondered how she was going to make that happen.

The first plan was to open all the ballroom doors and let the owl fly out on its own. When that failed, Taber put a call into the county Society for the Prevention of Cruelty to Animals (SPCA) Wildlife Rescue and Rehabilitation Center, who agreed to come out and help.

Upon arrival, two SPCA staffers conferred on a game plan and began the process of trying to bag the bird with nets secured on long poles. For two hours, these two dedicated people ran tirelessly and almost comically from one end of the ballroom to the other, trying to catch the bird as it made laps around the ballroom, occasionally landing on a chandelier to rest.

Watching the bird fly around the expansive ballroom was fascinating, and many folks were able to see an owl in the "wild" for the first time. Not to miss an opportunity, environmental staff used this chance to educate the curious about owls. Some spectators were worried that the bird might get hurt and thought that the bird should be left alone, adding that it would make the evening event memorable for the attendees. Others were concerned that the owl might attack dinner guests or pose a health risk while food was served.

Eventually, the owl landed on a corner speaker and an intrepid SPCA staffer was able to corner the bird and get it into the net—exhausted from holding the 25-foot poles aloft for over two hours. The owl was lowered to the floor, extricated from the net and released at an open door, flying effortlessly to the nearest tree to finally rest and await its evening hunt. $\mathring{\downarrow}$

CONTACT

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New Aircraft Spot Cleaners Now Available

DLA & NAVAIR Certify New Environmentally Preferred Alternatives

EXECUTIVE ORDER 13514 required 95 percent of most new contracts contain green products. To help the military aviation community meet that goal, the Defense

Logistics Agency (DLA) now offers environmentally responsible and easy to use aircraft spot cleaners that meet the requirements of MIL-PRF-85570 (Cleaning Compounds, Aircraft, Exterior). These field-tested products are on a Qualified Products List and can be used to clean weapon systems across Department of Defense (DoD) maintenance facilities. The new products are supplied ready-to-use in pre-diluted form, aerosol and pre-saturated wipes by the DLA Aviation Supply Chain in Richmond, VA.

The Naval Air Systems Command (NAVAIR) in Patuxent River, MD, partnered with the DLA Aviation Supply Chain to evaluate MIL-PRF-85570 cleaners and qualify more environmentally sustainable versions for Type I (General purpose, aromatic solvent base) and Type II

(General purpose, non-solvent). Type I was qualified in aerosol and pre-saturated wipes while Type II was qualified pre-diluted and ready-to-use.

The saturated wipes packaging conveniently portions out the cleaner in discrete amounts, reducing chemical use, waste and disposal concerns.

The new Type I cleaning compounds in aerosol and presaturated wipes provide the warfighter approved products that meet corrosion control maintenance requirements while deployed anywhere in the world. Previously, maintainers were experiencing a lack of acceptable, qualified aircraft spot cleaners and were using unauthorized products with high solvent content creating health, safety and corrosion concerns. When tested on aircraft, the cleaning effectiveness of the new aerosol product was identical to the unauthorized but still widely-used MIL-C-43616 aerosol. In addition, the saturated wipes packaging conveniently portions out the cleaner in discrete amounts, reducing chemical use, waste and disposal concerns.



The new ready-to-use Type II cleaners are effective and easy to use across multiple weapon systems anywhere in the world. Previously, these cleaners were purchased in bulk concentrated form. Aircraft maintainers then had to dilute the solution to the appropriate concentration. This presented numerous safety, environmental and logistical challenges, especially in remote, dry regions of the world where clean water was not always available.

Field testing the new products involved gauging the cleaning performance of the candidates at various military bases including Naval Air Stations Oceana, North Island, Norfolk and Key West and Andrews Joint Reserve Base.

Both Types I and II passed all tests and were found to provide environmental and logistical benefits to the user. National Stock Numbers (NSN) have been assigned and the Qualified Products Database has been updated with these new products.



	PRODUCT	MANUFACTURER
Type I	PENAIR M5571	Penetone Corporation Carlstadt, NJ 07072-2407
	CEE-BEE R-681	McGean-Rohco, Inc.
		Cleveland, OH 44105-3010
Type II	PENAIR C-5572	Penetone Corporation Carlstadt, NJ 07072-2407
	NAV-II	ZEP Sales & Service
		Atlanta, GA 30318-2825
	MA 102-RTU	JAD Chemical Co., Inc. San Pedro, CA 90731-1132

The NAVAIR 01-1A-509 Cleaning and Corrosion Control Manual and the MIL-PRF-85570 specification have been revised to include the newly qualified products. The four NSNs are available through DoD E-Mall or via military standard requisitioning systems.

Type I /Aerosol: 6850-01-578-4978

■ Type I /Pre-saturated wipes: 6850-01-587-3779

■ Type II /Trigger spray (32-ounce): 6850-01-581-9413

Type II /5-gallon can: 6850-01-582-3708

For additional information on these products, contact:

DLA Aviation Supply Chain Moraima Lugo-Millán 804-279-2651 moraima.lugo@dla.mil

Hem Tripathi 804-279-5727 hem.tripathi@dla.mil

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BE PART OF OUR SUMMER ISSUE

Submissions Are Due by 20 April

We're already planning our summer 2012 issue. And you can be a part of it! If you have a story that you want us to consider, you need to submit your final text and images by 20 April 2012.

The power of your experiences is even greater when you share them with our readers.

Your chances of being published in *Currents* are dramatically increased if you follow our article template. Simply request this easy-to-use template by sending an email to Bruce McCaffrey, our Managing Editor, at brucemccaffrey@sbcglobal.net. Bruce is available at 773-376-6200 if you have any questions or would like to discuss your story ideas.

We look forward to reading your stories about all the great work you're doing to optimize the Navy's energy use and serve as good stewards of the environment.

Currents Deadlines

- Summer 2012 Issue: Friday, 20 April 2012
- Fall 2012 Issue: Friday, 20 July 2012
- Winter 2013 Issue: Friday, 19 October 2012
- Spring 2013 Issue: Friday, 18 January 2013

You can also refer to your *Currents* calendar for reminders about these deadlines.

Beating Fleet Leaks

Expenses Down, Efficiency Up After Air Pressure Review at Pearl Harbor

LOW-PRESSURE AIR (LPA) is used for ventilation, sandblasting, painting and a host of other vital functions navy shipyards perform when they repair ships. At Pearl Harbor in Hawaii, the Commander, U.S. Pacific Fleet (COMPACFLT) pays the full cost of supplying LPA to the Pearl Harbor Naval Shipyard and

Intermediate Maintenance Facility and other users.

"In addition to reducing operating costs, we are always looking for ways to meet the Secretary of the Navy's goals for reducing energy consumption," says Capt. Daniel A. McNair, Pacific Fleet deputy civil engineer. "Pearl Harbor's LPA system presents

many cost saving opportunities without impacting the fleet's mission."

The Pearl Harbor LPA system includes 17 miles of distribution system piping outside of buildings and an equivalent amount inside buildings. Some of it is above ground, some of it is buried and some of the pipes are in close contact with the waterfront.





An 85-year-old portion of the LPA distribution system from the Pearl Harbor Naval Shipyard's Inside Machine Shop that was replaced earlier this year.

Rear Adm. Dixon Smith, Commander, Navy Region Hawaii, ordered Naval Facilities Engineering Command Hawaii to conduct a business case analysis to study LPA production, distribution and consumption at Pearl Harbor with two goals—reduce energy consumption used to generate low-pressure air to facilities now and identify a plan to improve condition, operation and maintenance costs in the future.

In order to provide actionable information that can provide consumption data in real time, COMPACFLT funded the installation of about 100 LPA flow meters on individual buildings and at key points within the distribution system that can be displayed on a web-based dashboard.

In addition, COMPACFLT funded a program to identify and correct leaks

U.S. Pacific Fleet's Integrated Energy Strategy

LPA IMPROVEMENTS ARE one of many initiatives that make up the Pacific Fleet's Integrated Energy Strategy, which was developed under the leadership of RDML Kate Gregory, commander, Naval Facilities Engineering Command Pacific and the COMPACFLT civil engineer, and RDML Richard D. Berkey, COMPACFLT deputy chief of staff for fleet maintenance.

"The strategy combines shore and tactical energy targets that are based on Chief of Naval Operations (CNO) and Secretary of the Navy (SECNAV) energy goals and objectives, putting all of us on the same page," says Capt. Daniel A. McNair, deputy civil engineer.

The integrated sea/shore strategy combines ongoing and future energy conservation and alternative energy initiatives on the shore with energy initiatives being implemented aboard ships and aircraft into an integrated picture, aligned to achieve CNO and SECNAV energy goals.

The strategy includes more than 25 separate sea/shore initiatives being implemented across shore commands, aboard ships, and aircraft and all of them have been integrated to move the Navy toward achieving energy security goals.

The COMPACFLT energy strategy is supported by Commander, Naval Installations Command, Naval Facilities Engineering Command, Naval Sea Systems Command and Naval Air Systems Command.

in the LPA distribution piping within the largest buildings at Pearl Harbor Shipyard and Intermediate Maintenance Facility. The exhaustive and ongoing examination exposed hundreds of leaky valves, deteriorated couplings and aging outlets throughout the system that were immediately corrected.

The process of identifying and repairing the leaks is often laborious. Some leaks are detected by simply walking through buildings and listening for the sound of air escaping from exposed pipes. In more advanced cases, ultrasonic acoustic detection devices are designed to identify leakage sounds at decibel levels exceeding the human audible range. Once the location and cause of a leak is determined, engineers consider multiple options for repair, ranging from the simple exchanging of faulty connections to the removal and replacement of large portions of piping.

Even more challenging are the distribution pipelines situated outside, often buried underground or attached to the underside of docks. The ultrasonic detectors are useful in surveying buried pipes, which can be excavated and repaired. But engineers seeking leaks underneath the docks must negotiate limited clearance to gain access to the pipelines. Confined to a floating dinghy, engineers sometimes lie flat on their backs to meticulously examine pipes with their bare hands.

"The leak detection and correction program reduced the system's average consumption by more than 1,000 cubic feet per minute, which translates to more than \$1 million a year in savings for the fleet," said McNair.

COMPACFLT also funded the installation of optimization controls to

reduce waste at the central plant production compressors. For example, the two existing 2,500cubic-foot-per-minute centrifugal compressors in one building were blowing excess air to the atmosphere whenever the system pressure achieved its target setting. COMPACFLT-funded upgrades eliminated that wasteful practice. COMPACFLT also is installing flow control devices at the entrance to 12 buildings for the purposes of lowering pressure to no more than is required for production machinery and to reduce losses at night.

In addition, COMPACFLT took steps to cut off service to unauthorized users of the low-pressure system and encouraged intermittent users to seek alternate sources such as portable generators to optimize LPA system efficiencies and save costs.

COMPACFLT energy managers say there's progress to be made in aligning parameters for future maintenance to prevent recurrence of the problems that have plagued LPA delivery. "In the meantime, we will continue with leak detection, flow monitoring and system upgrades before a final maintenance program is established and future improvements are identified and resourced," says McNair.

While all naval bases have their own unique operations for delivering LPA, the advances made at Pearl Harbor will likely prove helpful in addressing similar air pressure challenges at shipyards throughout the country and abroad. 🕹

Photos by MC1 Shawn Gentile

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For More Information

FOR MORE INSIGHTS into COMPACFLT's other energy-efficiency initiatives, read our cover story entitled, "Pacific Fleet Targets Shipboard Power Use with Meter Technology: Continuous Monitoring Maximizes Energy Efficiency" in the fall 2011 issue of Currents.

To the browse the magazine's archives, visit Currents' home on the Internet—the Department of the Navy's new Energy, Environment and Climate Change web site—at http://greenfleet.dodlive.mil/currents-magazine.



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The U.S. Pacific Fleet's ambitious effort to establish continuous monitoring of energy use by its ships, both pierside and underway, to conserve fuel and control costs

The Navy's efforts, led by the Naval Sea Systems Command's Supervisor of Salvage and Diving, to respond to the catastrophic oil spill that resulted from the explosion of the Deepwater Horizon mobile off-shore drilling unit

> The efforts of Seabees from the Navy's Construction Battalion Maintenance Unit-202 to help rescue 21 stranded pilot whales that were discovered along the shores of Cudjoe Key, FL

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